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October 2007 Vol. 5 Iss. 10

POST-HYPE REPORT

How The iPhone Alters The Playing Field



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Featured Articles

Just when you start to get a handle on what 3G means to mobile communications, along comes 4G. This month's featured articles offer background information plus the latest from the 4G front to help you stay up-to-speed.

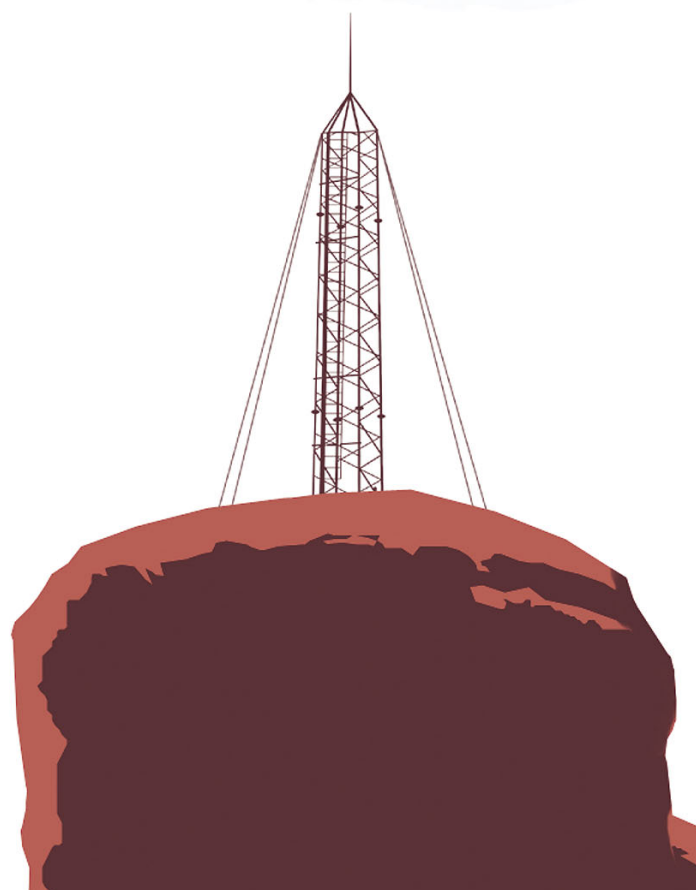
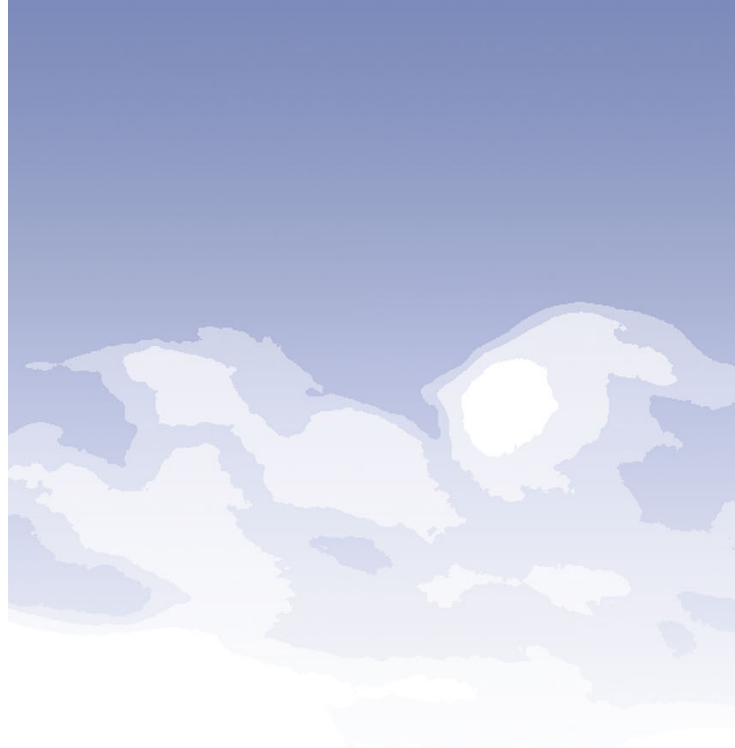
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On The Cover

Find out more about how the Apple iPhone is affecting mobile phone manufacturers and IT departments with a pair of special reports starting on page 14.

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Admit It, This Is The First Page You Turned To

Correction: In "Give The Cold Shoulder To The Common Cold" on page 70 in the September 2007 *PC Today*, we stated, "Currently, the FDA is looking into complaints that Zicam's intranasal cold remedies may cause anosmia (the loss of smell)." Although the FDA has been petitioned to investigate, the agency has not launched an official investigation into the matter. In an April 2007 statement, Zicam maker Marixx Initiatives states, "Seven separate federal judges in seven cases have now examined the scientific validity and reliability of [the theory] that Zicam causes smell loss, and each has concluded that the theory has no reliable scientific support and was reached without application of proper scientific standards and procedures."

Clarification: In a News Brief on page 57 in the September 2007 *PC Today*, we suggested looking for Document ID: 98082080 at www.csd.toshiba.com to determine whether your notebook battery is affected by a recall. That works, but a quicker way to find out, as of press time, is to go to www.bxinfo.toshiba.com.

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FAX: (402) 479-2193

Editorial Staff

editor@pctoday.com

Fax: (402) 479-2104

131 W. Grand Drive

Lincoln, NE 68521

Subscription Renewals

Toll Free: (800) 424-7900

Fax: (402) 479-2193

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Advertising Staff

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131 W. Grand Drive

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Dynamic Web Content	✓	✓	—
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Chat Channels	✓	—	✓
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Click-n-Build Applications	5	—	—
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We've Got Your Numbers

2 Even though worldwide cell phone shipments have slowed down this year, it hasn't stopped Samsung from moving forward. Recent stats indicate that Samsung slipped past Motorola for the first time ever as the world's second largest mobile phone vendor, shipping 37.4 million mobile phones in Q2 this year.

SOURCE: STRATEGY ANALYTICS

SAMSUNG

50

Let the (mobile) games begin! According to recent research, worldwide mobile gaming revenue is expected to reach \$4.3 billion this year, an increase of nearly 50% from 2006.

SOURCE: GARTNER

15

Might as well face it, you're addicted to... email? In AOL's third annual Email Addiction survey, 15% of Americans admit they are addicted to email. Those emailing with portable devices are checking email just about everywhere they go: 59% check email while in their pajamas, 37% check email while they drive, and 12% have checked email at church.

SOURCE: AOL & OPINION RESEARCH CORPORATION



Consumers like the idea of self service. In fact, 77% of consumers polled said they would prefer to do business with organizations that offer self-serve devices, such as kiosks and ATMs. The top three locations

77

where consumers would prefer to do self-service transactions are airports (70%), malls (65%), and grocery stores (55%).

SOURCE: BUZZBACK MARKET RESEARCH FOR NCR



travelocity

58 Planning a vacation? Go online. According to a recent survey, that's what a majority of people are doing. In 2006, 58% of U.S. Internet users planned their vacations online.

SOURCE: TRAVELFOCUSED.COM

89

Although 89% of surveyed Americans think texting while driving is dangerous and should be outlawed, 57% admit to having sent text messages while behind the wheel.

SOURCE: HARRIS INTERACTIVE



7.5 Million

Two weeks after a smoking ban was passed in public enclosed areas in the UK, texting increased by 7.5 million messages sent.

The surge is being attributed to people who are trying to keep themselves busy by texting rather than lighting up.

SOURCE: CELLULAR-NEWS



30,000

A new suite opened up at Four Seasons Hotel in New York, and it'll only cost you \$30,000 a night. The Ty Warner Penthouse is a 4,300-square foot luxury suite that cost \$50 million and six years to complete. Comfort Inn, anyone?

SOURCE: USA TODAY



Compiled by Carmen Carmack

Noteworthy

American Airlines® To Test Broadband Connectivity

In an agreement with service provider AirCell, American Airlines plans to test high-speed connectivity from the air, starting in 2008. On participating transcontinental Boeing 767-200 aircraft, passengers will be able to access the Internet with their notebooks and mobile devices through an 802.11a/b/g Wi-Fi signal.

“We understand that broadband connectivity is important to our **business customers** and others who want to use their PDAs and laptops for real-time, in-flight broadband communications.”

~Dan Garton,

executive vice president of marketing at American Airlines

Juniper Research Predicts 1 Billion Mobile Broadband Users By 2012

Following a recent study, Juniper Research foresees mobile broadband use bypassing 1 billion users worldwide over the next five years. Juniper also predicts that HSPA (High-Speed Packet Access) will account for about 70% of all broadband subscribers through 2012, with the most growth occurring in North America and Europe.

T-Mobile Launches Blast

T-Mobile added the Samsung SGH-T729 Blast to its slider-style phone lineup. The red-and-black phone features a double-tap QWERTY keyboard, an MP3 player, and a 1.3MP camera with 4X digital zoom and self-timer. The phone comes with Bluetooth connectivity, a microSD slot, and myFaves support, and it is compatible with popular email and instant message services.



AT&T Partners With eMusic Mobile

Adding to its mobile music platform, AT&T is providing customers with preview and download access to songs from the eMusic Mobile service. With a compatible handset, AT&T mobile customers can select from more than 2.7 million songs available in the eMusic catalog. A subscription to the service is available for \$7.49 per month, which lets users download as many as five tracks directly to their handsets. A duplicate copy of the downloaded music is sent to the customer's PC at no additional charge.



TSA Lifts Ban For Lighters

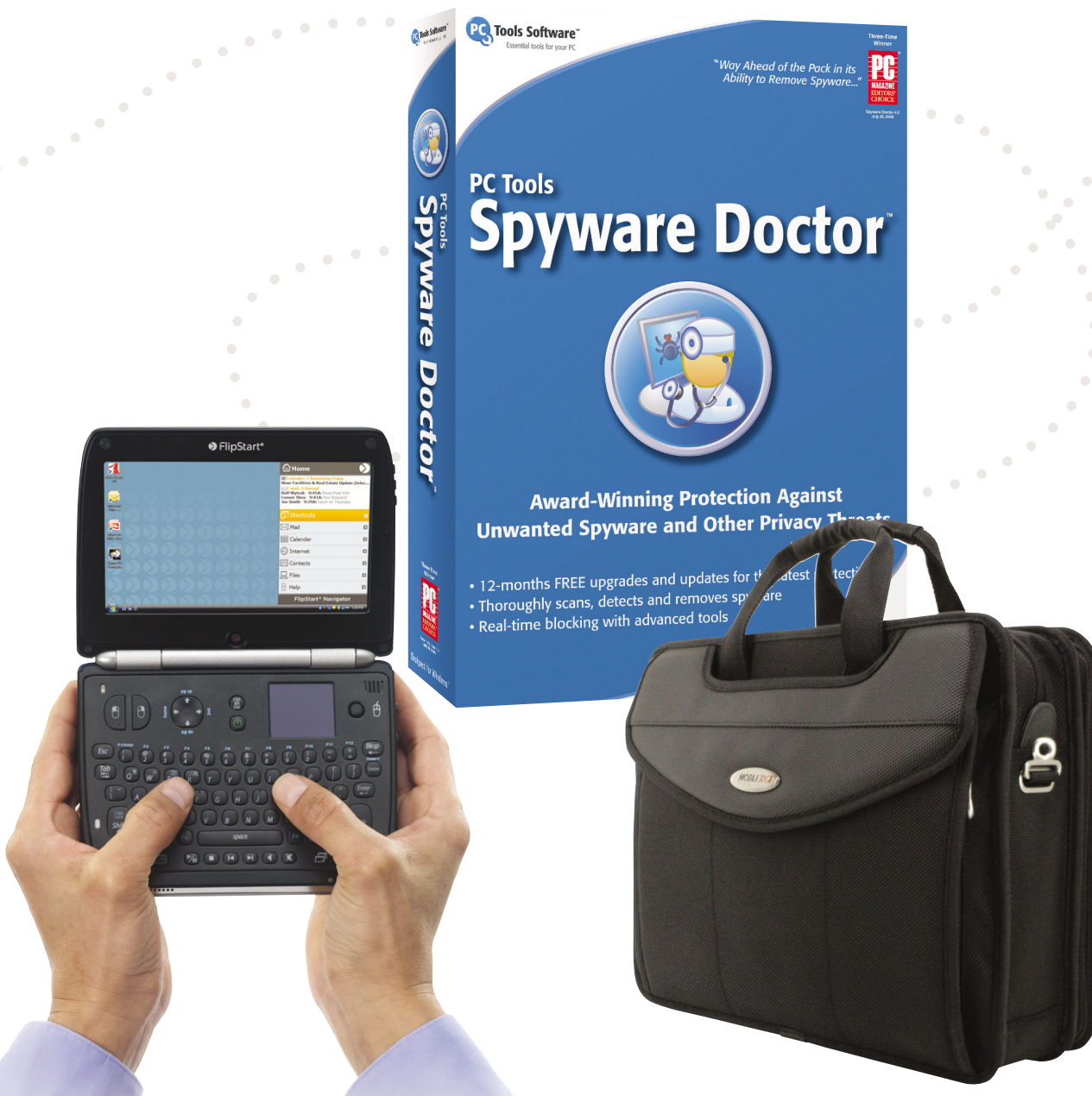
In an effort to focus on more harmful security issues, the TSA (Transportation Security Administration) is no longer banning common lighters in carry-on luggage. During the ban, security personnel collected more than 22,000 lighters each day. Torch-style lighters continue to be prohibited.

“Explosives remain the most significant threat to aviation,” said Kip Hawley, TSA administrator. “By enabling our officers to focus on the greatest threats, we are using our officers' time and energy more effectively and increasing security for passengers.”

United Announces International Premium Travel

United Airlines is adapting its fleet of 97 wide-body international aircraft to accommodate new flatbed seating with video on demand and other entertainment features. The new seats recline to a 6-foot, 4-inch bed for sleeping during international flights. United expects modifications to be complete in late 2009, with lie-flat seating available in United First and United Business classes.





Tech To Go

Special Products Section

This special products section is produced in partnership with leading manufacturers and software developers. It allows us to provide you with the most timely product information possible. Browse through these Tech To Go pages to learn more about the latest hot products.

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Little Laptop, Big Power

Compactness matters, particularly when you're constantly on the go, but the bottom line is productivity. FlipStart® Labs has introduced their solution to this perennial problem, the FlipStart® 1.0 PC.

It is essentially a tiny laptop, complete with a clamshell design and a fully functional QWERTY keyboard that includes hot buttons. Boasting a 1.1GHz Pentium® M Processor and 512MB DDR2, the FlipStart® runs full versions of Windows® XP Professional or Vista® Business. It even has a shock-mounted 30GB hard drive for an impressive amount of storage in such a small package.

The FlipStart® features an Intel® Enhanced graphics processor that powers the 5.6-inch, 1,024- x 600-pixel VGA display. Additionally, when the clamshell is closed, the FlipStart® 1.8-inch Infopane® on the lid enables quick access to email, calendars, and contacts. Wireless connectivity is powered by Sprint® Mobile Broadband (subscription required) and facilitated by Wi-Fi 802.11b/g. Although it only has one USB port, the FlipStart® comes with a port replicator that provides access to VGA, audio, 10/100 Ethernet, and an additional USB port.

With the FlipStart® you get a choice of battery: a heavier standard battery that

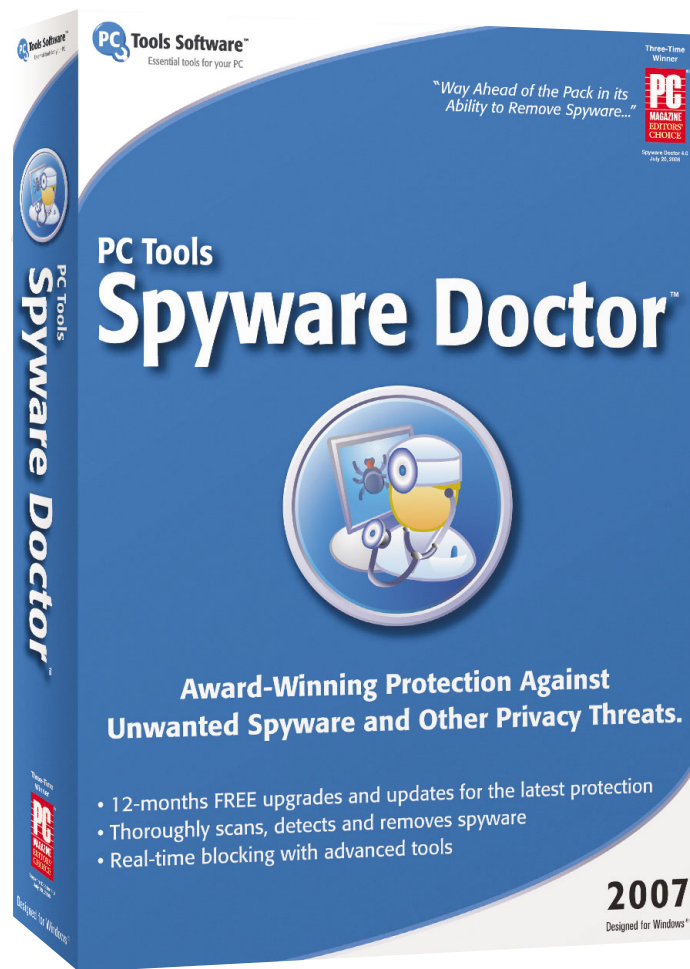
provides three to five hours of life, or a slimmer battery that runs for one to three hours. At 1.35 (or 1.6) x 5.9 x 4.5 inches (HxWxD) and just 1.5 (or 1.75) pounds, depending on which type of battery is used, the FlipStart® is compact, but it is also powerful and productive for its size.

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Spyware Doctor features intelligent automatic protection, which makes the software simple for anyone to use, and it's offered at an affordable price.

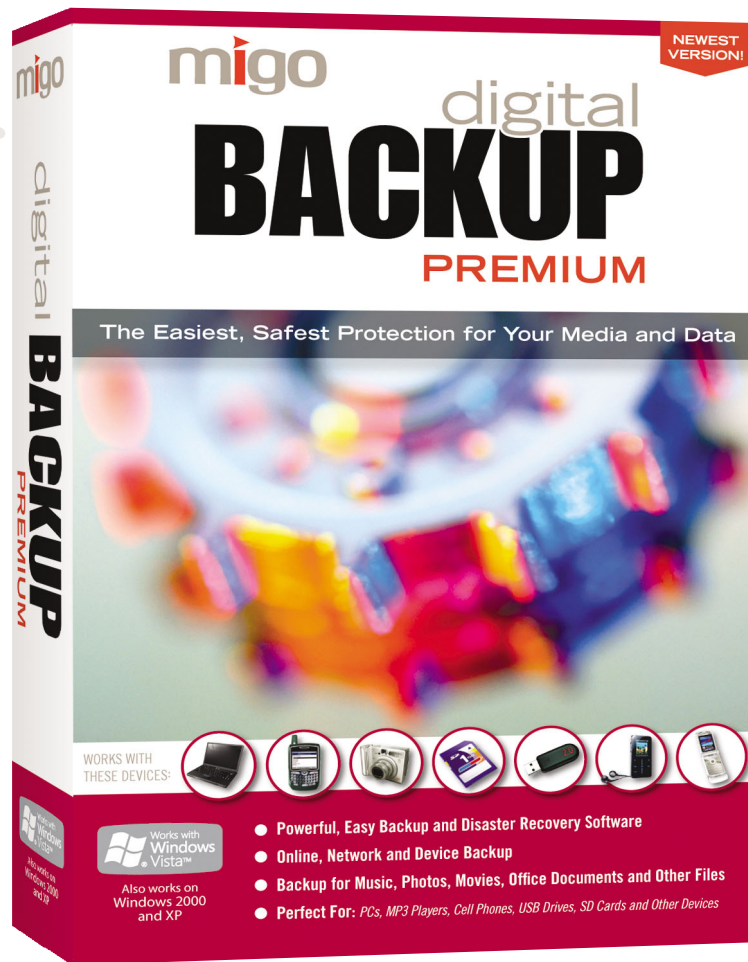
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Easy, Secure & Reliable

It's impossible to overstate the importance of keeping your mobile device protected with a reliable backup. After all, your handset isn't just a repository for your favorite family photos, songs, and videos—it may house your crucial personal and professional data, too.

However, anyone who has attempted the tedious task of manual backup knows that it's a time-consuming hassle. A new offering from Migo Software, Migo Digital Backup 3, aims to lighten the load for you. With the software's user-friendly interface, setting up your backup plan is quick and

painless. Migo Digital Backup 3 provides several useful preset backup plans, as well as options for customizing a process that suits your specific needs. Once your backup plan is in place, the software will take care of the rest, letting you use your device without disruption.

With Migo Digital Backup 3, your backed up files couldn't be safer. In addition to the usual offline backup options (CD, flash drive, etc.), users have access to 3GB of free, secure online storage space. In the event of a system failure, Migo Digital Backup 3 will help you restore your data,

reducing a crash to a mere inconvenience rather than a disaster.

Migo Digital Backup 3 includes:

- Backup of multimedia and Microsoft® Office files
- Real-time updates on backed up data
- Instant backup of new or changed files

migo
SOFTWARE

Migo Digital Backup 3 | \$39.99 | Migo Software | www.migosoftware.com/pctoday



Safe & Efficient Notebook Travel

As you head out the door in the morning, it can be a real pain to juggle your coffee, lunch, PDA, and the files that won't fit in your current notebook case. With the 17" Premium V-Load Briefcase, not only will you be able to fit everything inside (except maybe your coffee), you can head out the door looking pretty sharp, as well.

The 17" Premium V-Load Briefcase offers a Removable SafetyCell™ computer protection sleeve for your notebook. Not only will it fit today's larger notebooks inside, but it's compact enough to fit into any overhead or under any seat. Your mobile accessories will be kept safe and secure with the

Exclusive Wireless Security Shield™, while there are also pockets designed to fit your cell phone and PDA. Additionally, there are pockets for CDs, a separate expanding file section, and rear pocket with an EZ-Access ticket pocket for travel.

The 17" Premium V-Load Briefcase has a chic, black exterior, along with an exclusive Bungee Comfort System™ built-in elastic shoulder strap system that moves with you and reduces stress on your body. Not only does the Premium V-Load Briefcase look good and feel good, but it's durable, as well, featuring heavy-duty Duraflex™ fittings and 3360D Cordura™ nylon.

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The Power Of Touch

Technology Gets Easier For A Change



Even if you didn't snap up one of the 270,000 iPhones sold in the first two days of availability, you're bound to be familiar with the device's stunning beauty. Months of speculation, not to mention a tantalizing ad campaign, left many individuals salivating.

What makes the iPhone so compelling is a touch-based user interface. This type of interface eliminates one of the biggest design problems of many multiuse devices: physical buttons and control surfaces. Smartphones have a limited surface, so it doesn't take much to clutter them up.

Simon Says: Not Yet

Standard devices attempt to circumvent the clutter problem with buttons whose function changes as the selected device function changes. This cuts down on clutter, but creates a different problem: keeping track of what does what, and when. To eliminate button clutter and button confusion, IBM and Bell South, the designers of the first touch-based smartphone (the Simon, introduced in 1992), used a touch-sensitive display screen that allowed the phone's software to draw control surfaces on the

fly. The Simon was a flop, however, perhaps because of its very high cost and a limited marketing campaign. Nevertheless, it clearly demonstrated that combining a mobile phone with a touch-screen could correct many fundamental user interface problems.

Touchscreen Technology

The year 1974 saw the first commercial use of touch-based computer screens, although there were earlier versions confined to research labs. The touchscreen allowed users to interact with computers in a new and fundamentally different way. Users could control applications by simply touching icons or links; no previous experience required. These early touchscreens used resistive technology; pressing a finger against the screen caused the resistance to the flow of electricity to change, allowing the computer to detect that the display had been touched.

Touchscreen technology has changed significantly, although the resistive method is still the most common. The iPhone uses the capacitive method, which stores a charge on a layer of the touchscreen. Touching the screen

changes the characteristics of the stored charge; the device uses the measured change to determine where the touch occurred. One reason that Apple chose the capacitive method is its clear optical quality. It's also less affected by dust, water, or scratches.

Other, even more advanced technologies are in use or in development. Some of the new technology uses a source of light or sound waves to bathe the surface of the touchscreen. Touching the screen interrupts or absorbs the waves, allowing detectors to determine the location of the touch. Three leading technologies in this category include SAW (Surface Acoustic Wave), which uses ultrasonic transmitters and detectors; Infrared, which uses IR transmitters and detectors; and Optical, which uses IR transmitters and a pair of optical sensors, which detect that a touch has occurred when a shadow falls on them. The device then uses triangulation to determine location.

Two new methods bypass the use of applied energy and instead detect the mechanical energy generated when a glass surface is touched. These two systems, DST (Dispersive Signal Technology) and APR (Acoustic Pulse Recognition), have

the advantage of being optically very clear, with no need to apply special treatments to the glass layer. They are also immune to scratches, dust, and water.

Future developments will likely follow the promising DST and APR lines, although another technology has been capturing the imagination. FTIR (Frustrated Total Internal Reflection) uses a light source to set up a reflection pattern inside the panel. The touch of a finger scatters the light, changing the reflection pattern. The advantages of FTIR are ease and low cost of production. For a truly breathtaking demonstration of this technology in a touchscreen that can detect multiple finger and hand contacts, check out the video at Perceptive Pixel (www.perceptivepixel.com).

Multitouch

No matter which underlying technology is used, the biggest fundamental change has been the ability of a touch surface to detect multiple touches simultaneously. This allows a device to detect complex gestures and chording, which in turn can create more intuitive ways of interacting with the device. Both the iPhone and the HTC Touch take advantage of this technology.



The LG Prada displays its applications as touch-sensitive icons.

Perhaps the best-known multitouch gesture is the pinch, most commonly seen in iPhone ads. The pinch is used to expand or compress an area of the display, such as zooming in to see the details of an image, or zooming out to see a Web page. The move is performed by placing two fingers at the corner of the area you want to expand or compress and then dragging your fingers together (much like pinching) to compress or dragging your fingers apart to expand.

Another common multitouch gesture is the flick. This gesture, a quick flick of the finger across a surface, is supported by the iPhone for scrolling. The HTC Touch uses the gesture for changing from one application to another. A variation of the flick is the slower swipe, which turns on and unlocks the iPhone and brings up the TouchFLO GUI in the HTC Touch.

The Contenders

The iPhone isn't the only mobile phone to sport a touchscreen, but it's still ahead of the competition in terms of touchscreen user-interface design and implementation.

LG Prada (KE850). The Prada phone (\$549.99; www.pradaphonebylg.com) is a sleek and attractive mobile device that makes good use of its 3-inch display and touch-sensitive surface, with only a handful of dedicated hard buttons. The large keypad makes short work of dialing a number, although for some reason, LG chose not to include a touch QWERTY keyboard. Instead, the Prada uses a phone pad-based keypad for text entry—a cumbersome process at best, and one that doesn't make good use of the glorious, crystal-clear touchscreen.

HTC Touch. Using the Windows Mobile 6 platform, the HTC Touch (\$599; www.htc.com) has an easy-to-use, touch-based GUI layer called TouchFLO that allows easy touch-based access to all smartphone features. The Touch supports gestures and allows one-finger control of complex applications, but it lacks true multitouch capabilities, which can reduce complex functions to simple, intuitive gestures. One advantage the Touch has over both the iPhone and the Prada is that it can also be used with a



The HTC Touch not only includes an elegant touchscreen, it also supports gestures. A swipe across the screen takes you to the next application.

stylus, a plus for individuals with large or not particularly nimble fingers.

Apple iPhone. The iPhone (\$399 and up; www.wireless.att.com) is the 800-pound gorilla in the room. Apple not only refocused attention on mobile phones, but also on the multitouch touchscreen user interface. Multitouch capabilities, such as the pinch, and gestures, such as the flick, are just two examples of making a user interface seem natural and intuitive. Apple didn't get everything right, though. We can't help but wonder why the QWERTY touch keyboard isn't multitouch-aware. Using two fingers to access special characters (think SHIFT plus any punctuation or numbers) is certainly a more intuitive approach than the single-touch system the keyboard now uses (SHIFT, wait for the keyboard to change, then select a character).

What's Next?

The iPhone is the first real consumer device to deliver the latest multitouch touchscreen capabilities. We expect this interface to just get better and better as other manufacturers jump on the multitouch touchscreen bandwagon.

by Tom Nelson and Mary O'Connor

Fun For You, Nightmares For IT

Your iPhone & Other Gadgets May Pose A Security Threat



It usually starts innocently enough. Without thinking about the repercussions, a corporate user connects an iPhone or a new BlackBerry to a company PC—and therefore into a corporate network. Once he begins loading it with music files, photos, videos, and personal documents, the panic starts. For IT departments, these devices pose a security threat not only because they can introduce viruses, spyware, and other harmful agents onto the network, but also because end users can easily download sensitive company information, such as annual reports or financial data, causing a serious security breach.

Interestingly enough, there are wide-ranging views at companies and with IT experts on whether to allow users to connect these devices, whether a policy about their use can really be enforced, or whether the resulting support nightmare and security threat really warrants any

decisive action at all. It's an ever-evolving issue, but those in IT can implement a level-headed approach that squarely addresses the core problems, and end users can certainly adjust their thinking in a security-conscious world.

The Most Common Disruptions

For many IT departments, the most common gadgets that appear on networks are those that have built-in storage, such as an Apple iPod or a Palm Treo smartphone. End users typically want to add music and other rich media to the device, especially right before they leave work for a long commute. Although these portable electronics are no different from a laptop or other computer in terms of the security threat, the main

distinction is that they are typically personal devices, which means end users are more likely to use them for nonbusiness tasks such as loading games or media. However, the security threat still exists because the storage capacity allows any end user to transfer company information to a personal device, which is a clear violation of most company policies.

It's less common for end users to connect a cell phone to a company network, mostly because many phones do not provide a large amount of built-in storage and because many phones require that you connect using Bluetooth, which is more difficult to configure and not even available on many laptops and desktop computers. Often, it's the latest gadgets, such as the iPhone, that users want to connect because there's a newness factor and a desire to load the device with new media files.

IT As A Service Organization

Knowing that users will connect devices and download media from the Internet and copy files to a personal gadget is just the first step in developing a plan of action. For the most part, setting policies and communicating about them effectively will go a long way toward helping end users understand the security variables. Still, even with policies in place, there will



Michael Gartenberg from Jupiter Research encourages companies to view IT departments as service organizations—not as heavy-handed gadget dictators.

always be violations which will cause IT support headaches, and IT organizations will be wise to view the threats as serious. And yet, there's a changing perception of IT as being service-oriented rather than curmudgeons who enforce policies.

In general, IT professionals are often revered as elite computing experts. When a laptop hard drive fails or a virus freezes your screen, the IT support team will respond quickly to solve the problem. In some ways, when you don't see anyone in IT, it means your computing experience is running smoothly. Still, when it comes to connecting a personal gadget, including a cell phone, PDA, or even a laptop or Tablet PC, the IT department is often viewed as the enemy who will crack down on the unauthorized devices. According to Michael Gartenberg, a noted analyst with Jupiter Research, this perception is sometimes warranted because IT does not view itself as a service organization but instead as a rule-keeping group.

"It never works for IT to stand in the way of productivity," says Gartenberg. "The line between business use for gadgets and personal use is shrinking. Users buy them with their own money but want to use them for business and personal use. Policies can help, especially when it's cracking down on a mail room clerk stealing data, but when the CEO obviously has a personal device on the network, everyone else notices that. The best strategy is for IT to figure out which devices are approved and then work with end users to make those gadgets work well with the company network."

Understand The Variables

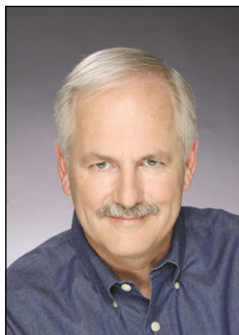
If an IT department sees itself as a service organization, the next step in this evolution is the understanding that end users will likely figure ways to get their gadget to work with their corporate PC and then copy files from a company network no matter what policies are in place. A better

approach, says Farpoint Group analyst Craig Mathias, is for IT to meet the challenge head-on by understanding the variables. If a company purchases the device for employees, they implicitly have the right to enforce policies over how the device is used. He suggests that one policy is to specify that end users can connect a company-owned gadget to the network for business use only—no personal use allowed.

"IT should decide what can go on the network and what can't, but this is why I always suggest that cell phones be a corporate purchase and not a personal purchase," says Mathias. "Corporations can then manage the devices directly and enforce policies easier. Of course, if it is a personal device, it is hard to enforce those policies."

Cast A Wide Security Net

While some IT experts encourage companies to view their IT departments as service organizations and to understand that end users will use personal devices no matter what, there are cases when it's critical to institute a much more comprehensive policy with clear penalties. For example, in a banking institution or a private company that is developing a brand new product, or even a company that is involved with the military or foreign organization, tighter control over personal devices is imperative. For those companies, it's important to make clearly understood policies, communicate about



Rob Enderle from the Enderle Group sees personal gadget use as a security threat that must be dealt with wisely and efficiently.

approved devices and their appropriate uses, and then state clearly what the repercussions will be if an end user violates the security policy or does not observe the proper protocols.

"At some companies, getting caught connecting a personal device, historically,



COURTESY OF APPLE

The Apple iPhone's 4GB to 8GB of storage space could be dangerous in the hands of a data thief, especially if he uses it to connect to your corporate network.

could get you fired on the spot," says Rob Enderle, principal analyst at Enderle Group. "When that happens one or two times, it tends to curtail the activity quickly. Confiscating the device, reporting the employee to senior management, and financial or career penalties are all common approaches to the problem. In the end, it is a flagrant violation of company security policies, and if you are going to stop the folks who are actually using these devices to steal things, you have to cast a broad net and treat everyone equally."

In the end, it is difficult to control how employees use their gadgets in the workplace, and harsh penalties won't deter 100% of would-be transgressors. By clearly stating security policies, purchasing devices for employees (and then instituting policies concerning their appropriate use), and allowing a set list of approved gadgets, companies can ease their IT departments' support and security burdens.

by John Brandon

Tech For The Road

Our Favorite Digital Accessories

With computers stashed in just about every nook and cranny of a vehicle these days to control its engine, transmission, brakes, exhaust, and every other major component, you might think that would be more than enough for most drivers. But that isn't the case. For many people, buying a car, whether new or used, is just the beginning of a spending spree to accessorize it with electronic gadgets.

The good news is that you don't need to buy a new vehicle to get the latest digital car devices. And you also don't need to be a mechanic to install those gadgets. According to SEMA (Specialty Equipment Market Association), Americans spent nearly \$37 billion last year on after-market auto parts and components; nearly double of what car owners spent nearly a decade ago. According to Peter MacGillivray, SEMA vice president for marketing, "some of the fastest growing areas are GPS navigation, car stereos, and other electronic car components. The car is now an extension of the living room."

The truth of the matter is that the latest digital auto accessories can bring any vehicle up-to-date, letting automobile owners enjoy satellite radio, GPS navigation, or backseat video, as well as giving them the ability to hack into the engine's computer or power outlets to charge their notebooks or mobile phones. We looked at five new auto accessories that will help you feel at home while you're on the road. Although we can't pimp your ride, rest assured that any one of these accessories will make driving more fun.

Actron AutoScanner Plus CP9180

\$180 • www.actron.com

The next time your vehicle's Check Engine light comes on, instead of going

to a garage and having a mechanic tell you nothing is wrong, consider purchasing Actron's AutoScanner Plus CP9180. At \$180, it may cost more than a visit to the mechanic, but this handy diagnostic tool can identify what's wrong with your car and turn off the annoying warning light, as well.

This OBD-II (On-Board Diagnostics-II) scanner is a simplified version of the devices mechanics and auto dealers use, and it works with vehicles sold in the U.S. since 1996. The AutoScanner Plus connects to your vehicle's OBD-II port, which is often well-hidden.

About the size of a paperback book and weighing 12 ounces, the CP9180 uses a 9-volt battery. After you locate your vehicle's OBD-II port and plug in the AutoScanner Plus, the scanner immediately displays error codes from the car's computer along with a brief explanation. Sometimes all you need to do is reset the fault and wait to see if it returns. Other times, you may need to take your vehicle to the mechanic to fix the underlying problem. Either way, the AutoScanner Plus gives you information about how your vehicle is operating.

In addition to reading the car's fault codes, the CP9180 checked our vehicle's oxygen sensor and recorded 108 operational details as we drove, which can help isolate an intermittent problem. In our experience with the device, the AutoScanner Plus connected instantly to three cars of varying age and model. Each time the device pinpointed a fault we created, such as a disconnected sensor, however, it had trouble





Actron's AutoScanner Plus CP9180 not only tells you what's going on inside your car, but it also can turn off error lights.

reading the VIN from a vehicle manufactured in 1999.

The thing we liked about this device was that unlike other scanners, we could connect the CP9180 to our PC to update its database of codes, read explanations online, and print any faults the AutoScanner Plus found.

Audiovox XpressR

\$130 • www.audiovox.com

By beaming dozens of channels without commercials down to earth, satellite radio is the future of mobile audio. Audiovox's XpressR satellite radio receiver can bring XM Satellite Radio's 170 channels of music, talk, and sports to any car, and does it with an innovative interface that lets you listen to one channel while scanning the dial. At \$130, this receiver is a bargain, but it costs \$12.99 a month to subscribe to the programming.

The XpressR is tiny and comes with a dock and mounting hardware so you can attach it to your vehicle's dashboard or an air vent. The receiver also ships with a cigarette lighter power adapter, antenna, and a remote control. We suggest buying the \$15 Sure-Connect cable so you can broadcast the



Listen to XM satellite radio broadcasts while scanning for other channels with Audiovox's XpressR receiver.

XpressR's programs through your car's FM radio.

The most innovative part of the XpressR is its interface. While other satellite radios only display the channel you are currently listening to, XpressR's monochrome split screen shows not only what song you're listening to but also what programs are playing on as many as five other channels. Just twist the main knob to get to the right station and press the knob to listen. At any point, you can pause and pick up where you left off or record up to 30 minutes of programming.

The XpressR performed well for us on several of our road trips. It may be the easiest way to add satellite radio to a car, but we much prefer the crop of battery powered satellite radios such as Delphi's MyFi (www.delphi.com) or Samsung's Helix (www.samsung.com).

Coby Electronics TF-DVD7750

\$160 • www.cobyusa.com

Having trouble deciding whether a backseat driver or screaming kids are more annoying? It doesn't matter which raises your blood pressure more because Coby's TF-DVD7750 video system can keep everyone quiet and entertained with movies on the go. The best part is that this in-car video system costs less than what you would expect to pay for a portable DVD player with a single screen.

The TF-DVD7750 has two parts: a battery operated DVD base unit

with a 7-inch screen and an extension display. Out of the box, you'll have everything you need to turn a backseat into a movie theater—except for the popcorn, that is. The device

comes with all the necessary cables, as well as headphones, a remote control, and straps to position the devices on the back of a seat's headrest. On the downside, the remote control only works with the base unit.

When you pop a DVD into the base unit, the DVD starts playing automatically. In addition to DVDs, the TF-DVD7750 plays MPEG videos, MP3 digital audio, and audio CDs, making it a mobile entertainment center. The 480 x 234 resolution display is hardly high definition, but it is rich and bright.

During our test-run of the video system, we experienced no video hiccups, although the display suffered from occasional flicker. And the unit's battery lasted for nearly three hours (plenty for all but the longest Hollywood blockbuster), but the device lacks a battery gauge.

Netropa Intellinav 3

\$350 • www.intellinav.com

If complicated GPS navigation systems are forcing you to revert to paper maps, Netropa has simplified life on the road with its Intellinav 3 system. At this

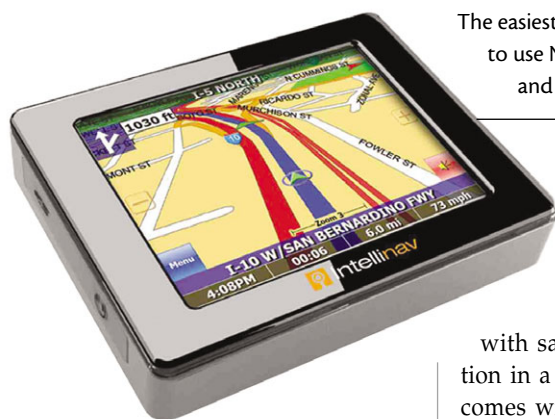


Turn the backseat into a mobile movie theater with the Coby Electronics TF-DVD7750 DVD player and screens.

Rock 'N' Ride

Alpine's IVA-W205 Mobile Multimedia System is nothing short of a mobile jack-of-all-trades. Based on Windows CE, the IVA-W205 in-dash base unit is the center of attention. It's not only a music machine with the expected Audio/MP3/Windows Media Audio CD player, but it also plays DVDs and can tune in AM, FM, HD, and either XM or Sirius satellite radio. There's an SD flash card slot that can play digital music. You can also connect your iPod or use the device's Bluetooth capabilities to connect to your cell phone and have hands-free driving.

Slide the faceplate down and pop in Alpine's BlackBirdPMD-B200 navigation unit and it's instantly transformed into a GPS navigation system. On top of live traffic updates and 6 million landmarks, the 4-inch screen displays maps and routing in 2D or 3D. This powerful mobile system not only gets you to where you need to go, but it also entertains you along the way.



The easiest way to get where you're going is to use Netropa Intellinav 3's digital maps and directions.

has a SiRFsStarIII GPS receiver and built-in antenna, but no plug for an external antenna. In our experience the device connected with satellites and reported its position in a quick 45 seconds. The system comes with maps of the U.S., Canada, Puerto Rico, and the Virgin Islands loaded onto a 2GB SD flash memory card. The database includes 6 million points of interest, including gas stations, ATMs, and public parks. The SD card can also hold music or images for playback during a road trip.

On several drives through urban and rural areas, our test unit tracked our car's position well while reading directions and displaying our next turn. The unit also displayed our speed and an estimate for how long it would take us to reach our destination. The Intellinav 3's Car Locator also displays where you parked your vehicle. The unit lacks the contour topographical maps and vehicle icons that some competing devices provide. During our test period, the Intellinav 3's 1,100 milliamp-hour battery lasted for approximately three and a half hours, so make

sure you bring the cigarette lighter adapter with you on longer drives.

Priced at \$350, the Intellinav 3 undercuts the competition on price without sacrificing features and ease of use.

Tripp Lite PowerVerter PV375

\$50 • www.triplite.com

When you hit the road, you don't have to leave your television or other electronic creature comforts behind because your vehicle can now power your mobile lifestyle. With 375 watts of instant power on tap, Tripp Lite's PowerVerter PV375 is the cheapest and safest way to power your world while on the road.

The bright blue PowerVerter plugs into your car's cigarette lighter and has two AC outlets. If you need more power, Tripp Lite makes a 600W version that adds a third outlet. When using the PowerVerter on a trip, your vehicle's electrical system is protected with a 40-amp fuse and an electronic circuit that shuts down before the car's battery drains completely.

We used the PowerVerter to watch a DVD movie on a 15-inch television. We also used the device to charge our notebook and cell phone, and we powered a

writing, the Intellinav 3 is the newest GPS system on the market. It's also one of the easiest methods for traveling from point A to point B without having to ask for directions.

Barely the size of a cassette tape and weighing 6.8 ounces, Intellinav 3 is heavier and bigger than Garmin's nüvi 200 series but several ounces lighter than Magellan's CrossoverGPS. (We reviewed each of these devices in our September 2007 issue of *PC Today*.) The Intellinav 3 comes ready to mount in your vehicle with hardware for attaching it to an air vent or windshield. The device also ships with adapters for an AC outlet and a vehicle's cigarette lighter.

The Intellinav 3's 3.5-inch touchscreen displays sharp, rich 2D and 3D views of the road ahead and, unlike products from competitors, you'll find all operational adjustments on one screen, making customization simple. Based on Microsoft Windows CE 5.0, the system



With 375 watts of power on tap, you can use Tripp Lite's PowerVerter PV375 to run your electronics from your car.

home stereo. Unfortunately, when we had a power failure, the PV375 wasn't enough to keep our refrigerator running. By far, the most annoying aspect of the PV375 is its loud fan. But if you stash the PowerVerter in the trunk or under a car seat, you can barely hear the fan, making the device a powerful travel companion.

by Brian Nadel



Actual Size

can i do all of these?

Guidance

voice guided navigation - Live Search - real-time traffic - weather

Productivity

world phone - complete mobile office - connectivity - SMS and e-mail

Sights & Sounds

camera / camcorder - FM radio - MP3 and video player - Virtual Earth

only with Pharos' GPS Phone



CTIA Certification



available at these fine stores:



Up to \$200 instant discount from T-Mobile, please visit www.pharosgps.com for more information.

authorized dealer

THE PATH TO 4G

IF 4G IS THE MOUNTAINTOP, THE TRAIL UP HAS BEEN LONG & ARDUOUS

As we anticipate stepping into the new world of 4G mobile telephony and contemplate the advanced capabilities we'll enjoy on our phones within the next few years, it's worth reflecting a moment on how cellular technology has arrived at the threshold of tomorrow.

The path to 4G has been well traveled by journalists and will be familiar to some of our readers. If your tastes run more toward dessert than the appetizer, feel free to jump ahead to the other feature package articles that detail the treasures and pleasures of 4G, beginning on page 26.

1G: The First Cellular System

The first commercial cellular network and service in the U.S. was launched in 1983 by Ameritech, a spin-off of AT&T. The underlying technology of that original system is called AMPS (Advanced Mobile Phone System), and it is still a viable technology, in use in areas not yet covered by advanced cellular systems. The first cellular phone was the DynaTAC

8000X by Motorola. It was 13 x 1.75 x 3.5 inches (HxWxD), weighed 28 ounces, provided 30 minutes of talk time per charge, and cost a mere \$3,995.

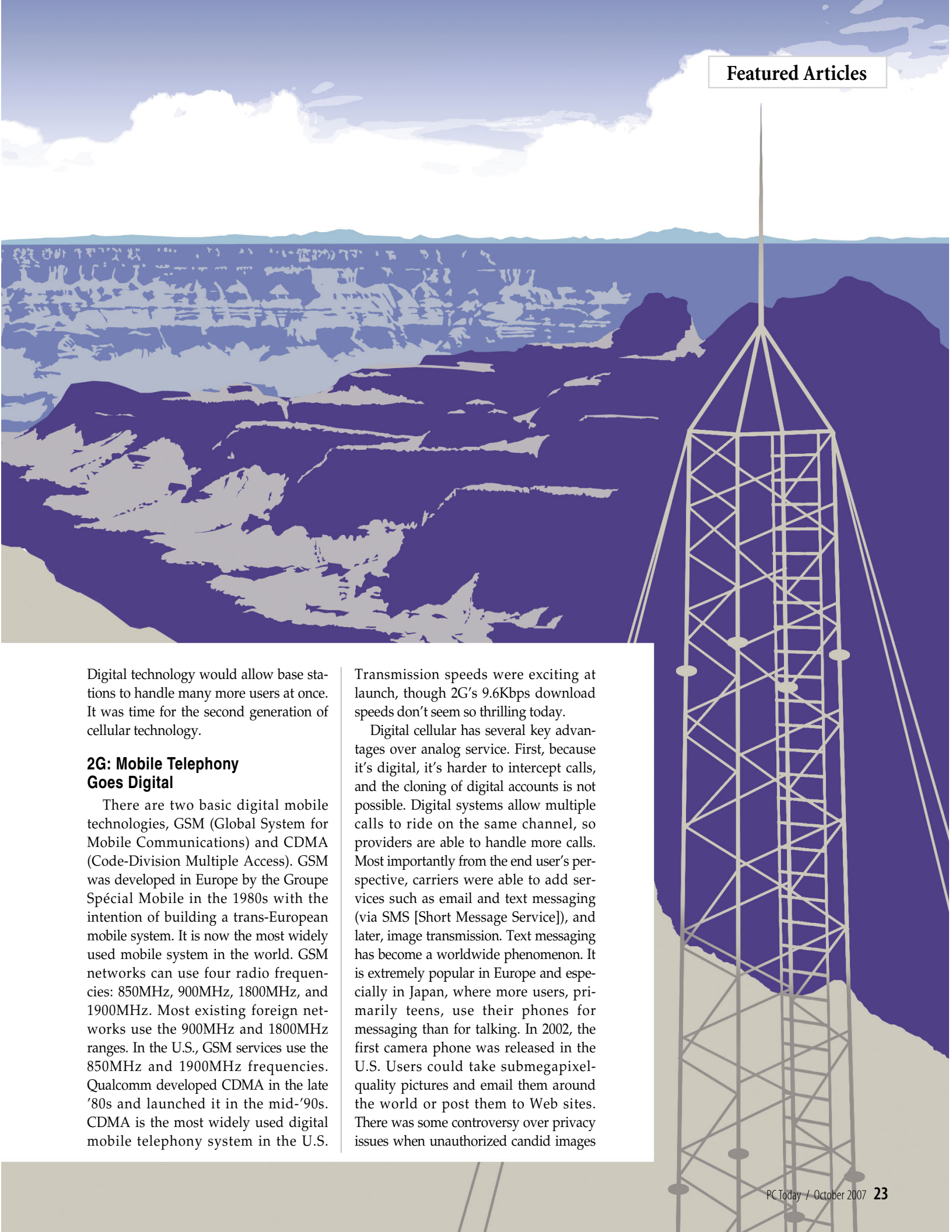
AMPS is an analog technology. It uses radio frequencies in the 800 to 900MHz range, as allocated and regulated by the FCC. The frequency range is divided, with half used for incoming signal transmissions and half used for outgoing signals. These bands are further divided into 30KHz channels, and each call uses one channel dedicated to that call. This allows multiple users to share a cell (actually, the base station for that cell) without interference. However, AMPS uses standard FM radio waves, and anyone with an FM scanner tuned to these frequencies can hear calls. In fact, crooks with the right equipment can capture anyone's account information onto their phones (a technique referred to as cloning) and run up huge bills, which are sent to the unsuspecting customer.

In its first year, the new cellular mobile system in the U.S. had 92,000 subscribers.

Early industry projections had forecast the potential user base for mobile telephones topping out at 900,000. In 1987, the countrywide subscriber base passed the 1 million mark, and by 1995, there were more than 33 million users. By that time, the next generation of mobile telephony was well into development.

A new system was needed because the world had gone digital. Analog AMPS was launched two years after the introduction of the personal computer. By 1995, the Internet was all the rage. Netscape's Mozilla Web browser had just hit the market, and email was taking over business communications. Business travelers were lugging heavyweight portable computers around airports so they would have access to both of these technologies. Cell phone technology developers had already seen the potential of providing that access via the cell phone, and they were on the case.

Also, it had become apparent that the growing customer base for mobile phones was nowhere near peaking.



Digital technology would allow base stations to handle many more users at once. It was time for the second generation of cellular technology.

2G: Mobile Telephony Goes Digital

There are two basic digital mobile technologies, GSM (Global System for Mobile Communications) and CDMA (Code-Division Multiple Access). GSM was developed in Europe by the Groupe Spécial Mobile in the 1980s with the intention of building a trans-European mobile system. It is now the most widely used mobile system in the world. GSM networks can use four radio frequencies: 850MHz, 900MHz, 1800MHz, and 1900MHz. Most existing foreign networks use the 900MHz and 1800MHz ranges. In the U.S., GSM services use the 850MHz and 1900MHz frequencies. Qualcomm developed CDMA in the late '80s and launched it in the mid-'90s. CDMA is the most widely used digital mobile telephony system in the U.S.

Transmission speeds were exciting at launch, though 2G's 9.6Kbps download speeds don't seem so thrilling today.

Digital cellular has several key advantages over analog service. First, because it's digital, it's harder to intercept calls, and the cloning of digital accounts is not possible. Digital systems allow multiple calls to ride on the same channel, so providers are able to handle more calls. Most importantly from the end user's perspective, carriers were able to add services such as email and text messaging (via SMS [Short Message Service]), and later, image transmission. Text messaging has become a worldwide phenomenon. It is extremely popular in Europe and especially in Japan, where more users, primarily teens, use their phones for messaging than for talking. In 2002, the first camera phone was released in the U.S. Users could take submegapixel-quality pictures and email them around the world or post them to Web sites. There was some controversy over privacy issues when unauthorized candid images

appeared on the Internet, but this was a technology that would not be stopped. Today, 5MP-plus camera phones are on the market; Samsung's SCH-B600 camera phone houses a 10MP camera. Some market projections forecast there being more than 1 billion camera phones in use by the end of this year.

Many of these digital services are additions to the digital cellular infrastructure rather than integrated apps, but it is the 2G digital systems that give them life.

One of the coolest features of GSM phones and service is the SIM (subscriber identity module) card. It is a digital ID card, a bit smaller than an SD Card, which holds all your personal subscriber information, your address book, and your text messages. When you get a new phone, or if you want to use multiple phones, you simply transfer the card from one phone to the other and you're good to go. Your phone service access is based on the card, not the phone. CDMA phones don't offer this feature.

After phones went digital, manufacturers could make them smaller and less expensive. Those features combined with the digital access phone makers promised caused phone sales to skyrocket. There were two big hassles related to the 2G versions of GSM and CDMA, however.

The first problem was that the two technologies aren't compatible. U.S. travelers to Europe and Japan using 2G phone service cannot use their phones in either location. Even those with U.S.-based 2G GSM service are affected because their phones use different frequencies than European and Japanese GSM networks.

The second annoyance was familiar to users who still used dial-up connections to access the Internet from their computers. The transfer of digital information to and from your phone took a long time, and you were paying for minutes used as you executed the transfer. The need for speed quickly became apparent to users and providers alike. Technology came to the rescue once again, in stages.

2.5G: Revving Up To Speed

The first improvement to 2G technology was an enhancement of the GSM system. Called HSCDS (High-Speed Circuit-Switched Data), 2.5G had real-world speeds of 30Kbps or so, which was an improvement over the original GSM technology. It was circuit-based, as is obvious from the name, and was hardly available in the U.S. before the first full GSM upgrade, known as GPRS (General Packet Radio System) launched. GPRS transmits data at rates up to 114Kbps (maximum rated, not actual), compared with HSCSD rates of 38.4Kbps (maximum rated). GPRS works only on GSM systems, and you must have a GPRS-ready phone to reap the benefits of the technology.

Before GPRS, all cell phone service was circuit-switched, meaning that any one call was given a complete circuit. When all circuits were full, access was denied to anyone else until a circuit became available. In this respect, the system was similar to the land-based telephone system. GPRS allowed the digital signals of a call to be broken out into packets and sent along one or multiple channels along with other packets for other calls. The packets are created at the

sender's base station, sent to the receiver's base station, and reassembled for delivery to the receiver. It works much like a standard computer network. The benefits are more capacity on the network and faster transmission times.

The CDMA network was similarly upgraded. In 2002, Verizon Wireless introduced a retooled version in the U.S. called CDMA2000. The initial release, called 1xRTT, provided real-world speeds of 40 to 60Kbps. It was rated as having a theoretical maximum speed of 144Kbps, which is the minimum speed for designation as a 3G technology. However, because interference, traffic congestion, and network overhead make it virtually impossible ever to hit the maximum rated speed (witness the real-world speeds given above, at less than half the maximum rated), most industry insiders consider 1xRTT a 2.5G technology.

Even as GPRS networks were being launched, developers were continuing to work on increasing speeds further. In 2003, GSM networks received another boost from EDGE (Enhanced Data for GSM Evolution) technology. EDGE put users at the cutting edge of digital mobile speeds. EDGE networks can handle three times the traffic at three times the speed of the GPRS networks. The good news for carriers was that EDGE technology could be laid on top of their existing infrastructures, so it was a relatively cheap upgrade, and it is common in GSM networks in the U.S. today.

EDGE speeds are rated at 384Kbps, but carriers don't promise more than 70 to 80Kbps. The GSM proponents say this is enough for downloading music and



Motorola has been a leader in mobile phones and technology since the cellular age began. When phones went digital, it was easier to make phones smaller. Consumers were wowed at the compactness of the 3.1-ounce StarTAC phone in 1996, an early clamshell that was designed to be worn around the neck on a lanyard. At launch, it was the world's smallest cell phone.



Another design shocker from Motorola came several years later with the release of the original super-slim Razr. The latest version offers full 3G functionality.

Pre-Cellular Mobile Technology: 0G

The very first mobile phones appeared shortly after World War II. These phones used standard radio technology using VHF and UHF bands and push-to-talk activation. Most were car-mounted systems with much of the works stashed in the trunk. Others were installed in attaché cases (leaving room for nothing else). The phones sent out

radio waves to locally installed base stations that connected to the wired telephone system. Operators were required to complete connections and, because of the meager channel allocations—three per metropolitan area—in many cases other people could hear your conversation (and you theirs).

An operator-free, direct-dial mobile system came

online in 1969. It was called IMTS (Improved Mobile Telephone System). It offered more channels (11 or 12, depending on the local system), but increased demand quickly filled those up, and interference from other mobile radios remained a problem.

These systems were supplanted by cellular systems but are still used in some remote areas.

The first handheld cell phone, the DynaTAC Motorola 8000X. With a full charge, you could talk on the 8000X for 30 minutes. At a cost of just \$3,995, we wonder how we ever lived without it.



video, sending email on the move, and full Web browsing. Apple seems to agree. It released the iPhone with EDGE technology rather than opting for 3G. EDGE speeds are often better than GPRS, especially in areas with strong network coverage, yet satisfaction is subjective, and providers tend to be more easily satisfied than their customers.

Because of its boost in speed over GPRS and its real-world below-3G speeds vs. its rated 3G speeds, EDGE is often listed as 2.75G.

Nokia is another major player in the development of cell phone technology. The company's original cellular phones were car mounted, not handheld. This Mobira Senator is an early model (1982) Nokia cellular car phone.



3G: The State Of The Art

Today, the third generation of cellular technology is being rolled out across the country and has been available in many major markets for several years. Speed ratings reach more than 2Mbps, but as always, reality delivers much less. Experience proves that even today's best is but a stepping stone to the holy grail of 4G. Under optimum real-world conditions, your 3G network might deliver 384Kbps for stationary systems and 128Kbps when in motion—not bad. Better video downloads and data transmission speeds are the reasons to go for 3G.

The important technologies of 3G mobility, as you'd guess, align with the two major underlying protocols, GSM and CDMA. The GSM version of 3G is UMTS (Universal Mobile Telecommunications System). Rather than an overlay technology such as EDGE, UMTS is an evolution of GSM and replaces it as a basis for mobile communications. UMTS employs W-CDMA (Wideband CDMA) for signal transmission across the air. Despite the closeness of the names, W-CDMA and CDMA2000 networks are not compatible.

In the CDMA corner, the 3G contender is EVDO (Evolution Data Only or, often, Evolution Data Optimized). As the name implies, EVDO is a data-specific technology. It is an overlay to CDMA and offers download speeds of

400Kbps, which is quite impressive. Upload speeds, as usual, are much slower, less than 100Kbps. An enhanced version has already rolled out in some areas. Called EVDO Rev A, it is much faster—perhaps four to six times—than the standard version.

Not to be outdone, UMTS has an enhanced set of protocols that boost its performance. It is called HSPA (High-Speed Packet Access), and there is a set for improving downloads (HSDPA [High-Speed Downlink Packet Access]; rated at 7.2Mbps) and one for boosting upload speeds (HSUPA [High-Speed Uplink Packet Access]; rated at 384Kbps). To date, only HSDPA is available in the market, and providers often restrict speeds to 1.4Mbps so as not to encourage bandwidth-clogging downloading that could choke out voice calls across their networks.

Next Up: 4G

When it comes to speed, more is always better, and what we have is never enough. Today's high-speed 3G phone networks are merely one more bend in the path to 4G, leading to the goal of full-speed video downloading and even true video streaming. The plans are already off the drawing board and in production. The industry markets 4G as the final step. Whether or not that's true we should know in just a few short years.

by David Finck

WHERE'S WiMAX?

TRACKING THE PROGRESS OF THE WIRELESS WALDO

In September 2004, companies were talking big about WiMAX (Worldwide Interoperability for Microwave Access). Cisco Systems had just joined the WiMAX Forum (a consortium of companies working on certification, interoperability, and adoption of WiMAX) and announced it would have products by April 2005. Other companies made similar announcements, yet for most users WiMAX remained a blip on the wireless radar screen, if they knew about it at all.

Fast-forward to 2007, and a handful of U.S. companies have deployed fixed WiMAX installations in small towns or rural areas, but the technology still lacks

the broad acceptance boosters initially predicted. So where's WiMAX now, why isn't it on your desktop, and when will it become the 4G (digital data and super-high-speed data) phenomenon proponents promised? For these answers, plus a mini-primer on the technology for those unfamiliar with it, read on.

A Globetrotting Technology

Although WiMAX has been relatively quiet, it's hardly been dormant. Like Waldo of the "Where's Waldo?" children's books, WiMAX has popped up all over the globe. In 2002, the Korean government allocated 100MHz of spectrum for WiBro, a parallel development

of mobile WiMAX, to overcome the data rate limits of current cellular technologies. Two Korean telecommunications companies launched commercial service in June 2006. (WiBro and mobile WiMAX [802.16e] standardized in 2004, so the two are now interoperable.)

Furthermore, companies have been trialing WiMAX for several years. Europe became fertile ground for WiMAX as early as 2004 when Spain, France, Ireland, and the UK had working WiMAX networks. According to WiMAX tracking firm Maravedis, WiMAX is now rapidly accelerating. In May 2007, the company released a report indicating that global WiMAX subscribers jumped

What WiMAX Can Do

WiMAX, both fixed and mobile, enjoys some specific advantages compared to other wireless technologies. It offers strengths you'll find in cellular and Wi-Fi transmissions, leaving proponents to dub it a "best of both worlds" technology. However, its benefit becomes less clear when compared with burgeoning 4G technologies.

WiMAX is faster than current 3G technologies. Sprint Nextel-Clearwire representatives say they expect their mobile WiMAX network to

offer 2 to 4Mbps per user, with a coverage area of 3 to 5 miles. WiMAX is also as mobile as cellular. Fixed WiMAX supports only fixed and nomadic (you can move a device and reconnect from a different, but still stationary, point) applications. Mobile WiMAX supports fixed, nomadic, and mobile applications, although some experts say it is not optimized for fixed installations at this time.

WiMAX uses smart antennas and other technologies to increase spectral

efficiency (the amount of data that can transmit per second, per hertz). It can also operate over licensed and unlicensed radio frequencies beginning at 2GHz and eventually going to 66GHz. (To minimize network incompatibilities due to spectrum differences, WiMAX equipment vendors frequently make their products support multiple bands.) This may enable WiMAX to offer advantages over other technologies in an increasingly spectrum-challenged environment, although governmental control

of licensed spectrum eliminates this benefit somewhat.

The speeds and ranges we discuss throughout this article are for current WiMAX standards. Today's WiMAX does not meet the expected 4G requirements (maximum download throughput of more than 100Mbps), which the ITU (International Telecommunications Union) has yet to define. However, it comes closer than any other current wireless broadband standard. The upcoming 802.16m standard may change all that.

to 950,000 in the first quarter of 2007, which was an 85% increase over 2006. That's a pittance compared to the number of cellular or Wi-Fi customers, but it may indicate that WiMAX is finally on a roll.

How It Works, Why It Didn't

Like Wi-Fi, WiMAX is a wireless data transmission technology that operates over radio waves. It is an IEEE (Institute of Electrical and Electronics Engineers) protocol—802.16 for Metropolitan Area Networks—with numerous iterations, including 802.16-2004 (fixed WiMAX) and an amendment for mobile environments, 802.16e-2005 (mobile WiMAX).

intervene. The WiMAX Forum indicates a goal for fixed WiMAX of 40Mbps over 6 miles in a non-line-of-sight, point-to-multi-point transmission; mobile WiMAX is even lower.

The perceived delay in development of full-scale WiMAX networks is partially due to the time and expense involved in building and implementing them. (Consider how long it took cellular devices to become common.) However, IEEE decided to adopt different technologies for the mobile amendment of the WiMAX standard, which further delayed the process. Some companies delayed their development of WiMAX products until the mobile standard was complete. Others

4G, Straight Ahead?

Despite Sprint Nextel's reference to its network as 4G, the ITU (International Telecommunication Union) has yet to approve WiMAX as an official radio interface. However, in June, the group, which also will be officially defining 4G (sometime in 2009, with commercial



Intel has long been a WiMAX booster; in March 2006, the general manager for Intel's Mobility Group, Sean Maloney, demonstrated a scooter outfitted with mobile WiMAX.

In theory, WiMAX offers shared throughput of as much as 70Mbps outdoors with a clear line of sight and for up to approximately 6 miles, but in practice it cannot do both at once. As with all wireless technologies, coverage drops without a clear line of sight, especially when dense structures

who released fixed products had to go back to the drawing board to transition from fixed to mobile.

What You'll Do With WiMAX

For WiMAX boosters, it seems the issue isn't, "What can you do with WiMAX?", but rather, "What can't you do with WiMAX?" However, while their assertions sound great in theory, analysts say the realities are still in question.

Daryl Schoolar, In-Stat Networking Group senior analyst, says fixed WiMAX can continue to offer benefits to rural consumers because it covers territory (such as Alaska) where traditional wired broadband isn't practical. It may also help give Wi-Fi customers better coverage because it can be used for hotspot "backhaul," connecting disparate Wi-Fi zones.

If the technology develops appropriately, Mobile WiMAX could give users uninterrupted, high-speed (potentially up to 10Mbps) connections for streaming video, television, gaming, and videoconferencing, and potentially uniting their Internet, telephone, cable, and cellular connections under a single network. "If you offer a flat rate of \$50 a month for a fixed data connection to the house, plus unlimited cellular data, the ability to take your laptop and connect wirelessly on the road,

plus the ability to connect other devices to the network, that's a real value," says Schoolar.

An In-Stat survey conducted earlier this year backs that assessment up. In a study depicting theoretical scenarios, consumers opted for WiMAX over Wi-Fi or 3G, and 50% said they would swap their current home broadband provider for one that bundles wireless with the service (assuming prices didn't change). According to a report from telecom forecaster Boschulte Schnee Group, cable providers are already reaching a spectrum crisis, as customers demand ever more bandwidth-intensive services such as HDTV. The report states WiMAX could be a less-expensive means of reaching consumers with converged voice and high-bandwidth data services.

Intel, Motorola, and other device manufacturers are talking up WiMAX for the entire universe of mobile devices, including cellular phones, notebooks, gaming devices, and multimedia players. LG announced the first WiMAX-compatible mobile phone (the LG KC1) in August without providing any availability details.

Analysts think WiMAX will also be less proprietary than traditional cellular networks, with open standards and more collaboration between disparate entities. "The entire WiMAX messaging is revolving around a much more open network," says Gemma Tedesco, senior analyst for In-Stat Cellular And Wireless Broadband Technologies. "Sprint's vision is that end users buy WiMAX-enabled devices at retail, and then they can get on whatever WiMAX network they want. No longer is the purchase of the device tied to a carrier, and in the case of cellular, the carrier's specific way they do the technology and frequency they operate in."

A recent announcement regarding the upcoming Sprint Nextel and Clearwire network shows this open-exchange approach in action. Google has signed on to provide a portal with co-branded versions of Gmail, Google Talk, and other offerings, plus location-based services based on Sprint Nextel's location-detection technology. This marks the first time in the U.S. that a wireless carrier has officially incorporated a Google-branded product.

WiMAX Buzz

Because WiMAX is such a hot topic, and possibly because its path to 4G seems more clearly defined, there are a number of excellent sites where you can obtain updated WiMAX information. A few of our favorites are:

WiMAX Forum (www.wimax.com):

Probably one of the best sources of WiMAX information. This site has a huge archive of news on WiMAX (and how it's being impacted by competitors), plus a substantial Learning Center, lists of WiMAX vendors, and more.

WiMAX Industry (www.wimax-industry.com): Close the pop-up questionnaire that appears when you first navigate to this site (you do not have to answer it) to access an array of up-to-date WiMAX news, white papers, and abstracts of research reports.

WiMAX 360 (www.wimax360.com): This subsite of WiMAX.com bills itself as "WiMAX know-how from engineers, technicians, and WiMAX professionals." It offers links to news articles relating to WiMAX, a forum where you can ask questions, and a newsletter to which you can subscribe.

WiMaxxed (www.wimaxxed.com): This ardent booster site is another good resource for WiMAX information, although it's a tad less objective than the WiMAX forum. Expect to hear everything positive about WiMAX here.

Telephony Online (telephonyonline.com/wimax): The WiMAX "One-Stop" section of Telephony Online is probably the most objective place for WiMAX information. Here, you'll find WiMAX and WiMAX-related (including competitive) news and analyst updates.

IEEE WirelessMAN 802.16 (ieee802.org/16): As the official Web site of the IEEE's WiMAX working group, this site is rather technical, but it's the place to go for up-to-date information on where the specification stands.

development by 2011), recommended that a subset of WiMAX be approved as an official 3G radio technology, increasing the chances of approval as a 4G standard down the road.

The IEEE also has yet to finalize the next iteration of WiMAX, 802.16m, which it likely will not ratify before 2009 or 2010. However, the working group has indicated 802.16m will be (somewhat) backward compatible with 802.16e-2005, and it will support maximum throughput of 100Mbps for mobile and 1Gbps for fixed. It also may

support up to 40MHz channel widths, enabling extremely high throughput with no latency. However, many say this specification is unnecessary and unusable, given that spectrum isn't limitless.

Analysts from companies such as In-Stat, ABI Research, and Frost & Sullivan caution users that many challenges remain, especially for WiMAX, over licensed spectrum. "It's too early to predict how WiMAX will develop," says Daryl Schoolar, senior analyst of research firm In-Stat's Networking Group. "It could be a really big data force,

but you have so many issues about getting your hands on licensed spectrum. Nevertheless, if Sprint can pull a profit from it, other 3G operators will take notice."

"Another possible concept is that none of these technologies will be able to offer +100Mbps within real-world spectrum limitations," says Gemma Tedesco, In-Stat senior analyst, Cellular And Wireless Broadband Technologies. "So, true 4G will be either an enhancement to one of these technologies or some kind of blend [of them]." *by Jennifer Farwell*

Who's Testing The Waters

Immediately after final ratification of the fixed WiMAX standard (802.16-2004; ratified in July 2004), monitoring the WiMAX waters was like watching a bunch of kids brave a cold lake in early summer. As soon as one company ran in, another ran out, saying it would wait for better conditions, which meant approval of the mobile WiMAX standard and determination of whether or not it would be interoperable with fixed WiMAX.

After the IEEE ratified the mobile WiMAX standard (802.16e-2005) in December 2005, the crowd willing to brave the waters grew larger, even though many experts still perceived WiMAX primarily as a limited-scope, fixed solution in rural areas. Within a few months, companies that were producing fixed WiMAX chipsets began the transition to mobile WiMAX, and service providers jumped into the fray.

By mid-2006, 175 companies were trialing WiMAX

worldwide. In July 2006, Intel, which has always been a leading force in WiMAX development, and Motorola, with whom Intel inked a collaboration agreement in 2005, invested \$900 million in WiMAX startup Clearwire. In August 2006, cellular carrier Sprint Nextel announced it would work with Intel, Motorola, and Samsung to develop an infrastructure and mobile WiMAX-enabled chipsets for a 4G network.

However, the big surprise was AT&T, which in November 2006 announced it was using mobile WiMAX to offer fixed broadband service in Pahump, an exurb of Las Vegas, the first U.S. commercial mobile WiMAX deployment. (AT&T had previously trialed only fixed WiMAX.) More recently, AT&T's subsidiary, Alascom, began offering WiMAX broadband service in Juneau, Alaska, with plans to expand to more Alaskan cities in 2008.

Earlier this year, the four leading fixed WiMAX chipset leaders (Fujitsu, Intel, Sequans, and Wavesat) had

announced plans for mobile WiMAX solutions, and Motorola had chosen early mobile WiMAX chipset leader, Beceem, as the supplier for some of its notebook cards and other WiMAX devices. Shortly thereafter, Towerstream, a WiMAX provider that uses the fixed variant of WiMAX, expanded its network to eight cities, which now include New York, Chicago, Miami, Los Angeles, Seattle, Boston, San Francisco, and Providence/Newport, R.I.

In July of this year, Sprint Nextel and Clearwire announced collaboration on a mobile WiMAX network in the 2.5GHz spectrum, which the two companies combined own in the U.S. (Each provider will serve specific markets, but the two networks will be interoperable.) Pending FCC approval, the network will begin roll out by the end of the year. It will eventually serve nearly 300 million people; 100 million by the end of 2008. ABI Research expects sales of mobile WiMAX to surpass

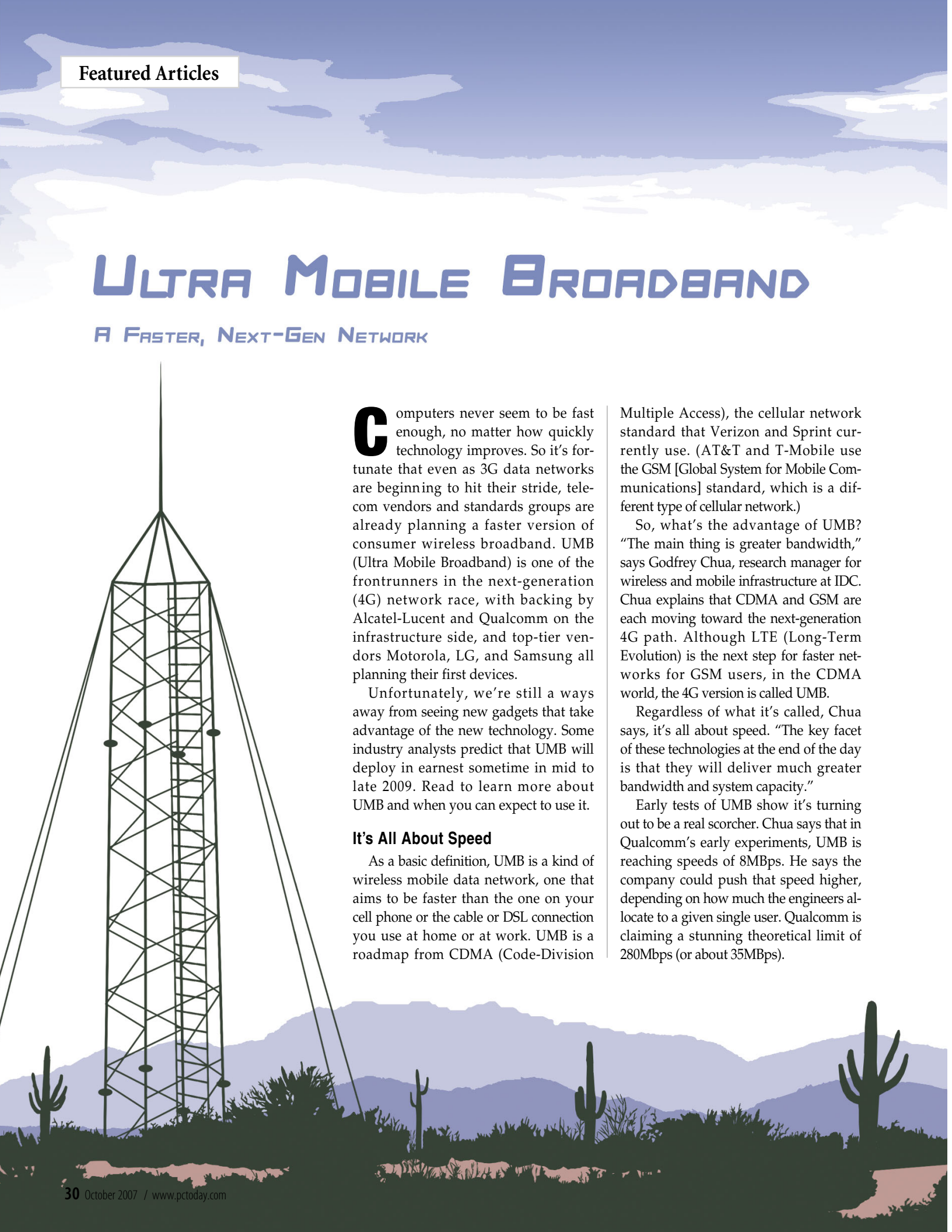
those of fixed in 2008, as well.

Intel also has slated 2008 as the year for its big WiMAX push. Ron Peck, director of wireless content with Intel's WiMAX Group, has indicated consumers may see WiMAX laptops and PC cards in 2008, followed by UMPCs (Ultra-Mobile PC) and other mobile devices in late 2008 or 2009. However, as of early August he says Intel doesn't have any signed deals with device manufacturers yet.

At press time, the world's leading global mobile communications group, Vodafone, had just joined the WiMAX Forum, which now has 470 member companies. Steve Pusey, Vodafone's global chief technology officer, reported the company is "technology neutral" but is seeking "to evaluate the full capabilities and potential of this technology." Google announced it may bid on the 700MHz spectrum for WiMAX during the early 2008 auction, assuming the FCC approves its auction rules.

ULTRA MOBILE BROADBAND

A FASTER, NEXT-GEN NETWORK



Computers never seem to be fast enough, no matter how quickly technology improves. So it's fortunate that even as 3G data networks are beginning to hit their stride, telecom vendors and standards groups are already planning a faster version of consumer wireless broadband. UMB (Ultra Mobile Broadband) is one of the frontrunners in the next-generation (4G) network race, with backing by Alcatel-Lucent and Qualcomm on the infrastructure side, and top-tier vendors Motorola, LG, and Samsung all planning their first devices.

Unfortunately, we're still a ways away from seeing new gadgets that take advantage of the new technology. Some industry analysts predict that UMB will deploy in earnest sometime in mid to late 2009. Read to learn more about UMB and when you can expect to use it.

It's All About Speed

As a basic definition, UMB is a kind of wireless mobile data network, one that aims to be faster than the one on your cell phone or the cable or DSL connection you use at home or at work. UMB is a roadmap from CDMA (Code-Division

Multiple Access), the cellular network standard that Verizon and Sprint currently use. (AT&T and T-Mobile use the GSM [Global System for Mobile Communications] standard, which is a different type of cellular network.)

So, what's the advantage of UMB? "The main thing is greater bandwidth," says Godfrey Chua, research manager for wireless and mobile infrastructure at IDC. Chua explains that CDMA and GSM are each moving toward the next-generation 4G path. Although LTE (Long-Term Evolution) is the next step for faster networks for GSM users, in the CDMA world, the 4G version is called UMB.

Regardless of what it's called, Chua says, it's all about speed. "The key facet of these technologies at the end of the day is that they will deliver much greater bandwidth and system capacity."

Early tests of UMB show it's turning out to be a real scorcher. Chua says that in Qualcomm's early experiments, UMB is reaching speeds of 8MBps. He says the company could push that speed higher, depending on how much the engineers allocate to a given single user. Qualcomm is claiming a stunning theoretical limit of 280Mbps (or about 35MBps).

"One of the key benefits of UMB is that it leverages the [existing] 3G ecosystem," says Bertha Agia, Qualcomm public relations manager. "This group, which includes the world's leading manufacturers, developers, publishers, and content providers, is the backbone for operators, who together are serving more than 430 million 3G customers globally on more than 1,000 3G device models. It's natural that these ecosystem partnerships would extend to support UMB services," Agia says.

In March of this year, Qualcomm announced its next-generation UMB end-to-end solution, the Cell Site Modem CSM8900 and Mobile Data Modem MDM8900 devices; both support the UMB standard. The products won't be available for at least a year, however, partially because the UMB standard still isn't finalized. Other vendors, such as Alcatel-Lucent, are also working on their own products that will support UMB.

Endless Possibilities

The possibilities for such astounding data speeds are endless. For example, Chua explains that users could stream HD video with an 8MB pipe. "As an example, if you've been on ABC.com, they're streaming HD video for four of their shows," he says. "The site says that you need at least a 2MB [per second] connection, and ideally one that's faster. If you have FiOS or a fast cable modem, you can take advantage of that HD streaming video they offer today."

But FiOS and cable modems are desk-bound; UMB would give consumers that speed on the go, as well. "With that level of bandwidth, it really opens up the gamut of capabilities and services you could take advantage of as a user," Chua says. "If you have one of those EVDO cards now, imagine turning that into an 8MB pipe, zooming through Web pages . . . comparable or even faster than what we're getting at home, which is supposed to be the benchmark for data speed these days."

UMB could have wide implications for all kinds of gadgets. "Most likely cards

[for laptops] will be introduced first, followed shortly by embedded laptops, Ultra-Mobile PCs, phones and other handheld devices," says Agia.

A Replacement?

If UMB turns out to be that fast in practice, why not abandon the typical cable or DSL home broadband connection altogether, subscribe to only UMB, and then pay just one fee per month? It's a distinct possibility, though it's still early in the game to know if there will be enough capacity. "These are the early stages of the 4G rollouts," says Jeff Kagan,

What You'll Do With UMB

Aside from HD video streaming, UMB could make a lot of other things possible. Here are just a few: local TV stations available anywhere, ultra-smooth videoconferencing, multimedia-based social networking with users sharing video and audio with abandon, home and business appliance monitoring, ultra-low-delay gaming, and for businesses, about 500 simultaneous calls

over VoIP (Voice over Internet Protocol), according to the CDMA (Code-Division Multiple Access) Development Group.

Heady stuff, to be sure. But the real question is: When will the bandwidth be available, and how much will it cost? Anyone who bought an EVDO (Evolution Data Optimized) card for their laptop, or tried to surf the Web on their cell phone knows

that current data networks are easily overwhelmed. Verizon goes so far as to cap user downloads on the sly at a maximum of 5GB per month, even though they advertise the service as "unlimited." So it remains to be seen if similar limitations will be in place when UMB (or LTE [Long-Term Evolution], or WiMAX, or whichever 4G standard) finally rolls out to the public.

an independent telecom analyst. "There will be many competing technologies in that space. They all have strengths and weaknesses depending on the customer needs. But they all offer a fast wireless connection for data. That opens up new avenues."

Regardless, Kagan was optimistic about 4G technology one day replacing cable or DSL connections, though he cautioned that it's a long way off. He says that with this kind of technology, eventually certain customers could choose this as their high-speed data connection instead of the wire line version from the phone company or their cable television company. "The customers that this would make sense for would not need a high-speed connection at home when they are not there," Kagan says.

"But the majority of users will still have a high-speed connection to the house because of others living there, or because tomorrow, all sorts of appliances and household electronics will need an ongoing connection to the Internet," he says.

Laptop EVDO (Evolution Data Optimized) Rev A cards such as the Novatel Wireless Merlin X720 represent the fastest data cards available today. UMB-compatible versions could increase data speeds over these cards by a factor of almost 100. (Credit: Novatel Wireless)



Fast Approaching

Chua says that although there is great promise for UMB, the timeline is the key issue. Qualcomm already has a demonstration network in place at their campus, and they're working toward some trials with service providers. By early next year, Chua predicts we'll begin to see service provider trials using UMB. "When it will commercialize is a question mark," he says. "[Given] 2008's trials, it should be 2009 or 2010 before we really see something. It takes about a year for a service provider to get comfortable and work out the kinks with the technology."

There's also the matter of competing 4G standards. For example, there's one advantage that UMB doesn't have: time to market. That's reserved for WiMAX, a third standard that Sprint is backing heavily and looks to be first out of the gate. It's not technically a 4G network, having grown out of an existing 802.16 Wi-Fi standard, but the end result will be comparable. "Sprint will conduct soft launch of WiMAX service in Chicago, Baltimore, and Washington, D.C., by the end of 2007," says Sprint Nextel spokesperson, John Polivka. He says that after the soft launch, Sprint will optimize

the network experience during the first quarter of 2008 and begin commercial launch of the service as of April of 2008, with plans to cover 100 million people by the end of next year.

"It will be interesting to see what happens over the next two to four years," says Chua. "Things will get better for us as wireless users. Adoption takes a while, with upgrading networks, rolling out infrastructure, and designing devices. None of that happens overnight, but the technology is moving at a fast pace."

Kagan agrees, pointing out that we're in the middle of watching the wireless industry change. "It's getting faster and more available to users wherever they are," Kagan says. "It's not about voice anymore; it's about data and all the things we can do over wireless networks. The cell phone is becoming the third screen in our lives . . . after the television and the computer screen."

In the end, everyone benefits. The only thing that will matter is having such a high-speed connection, regardless of the technical standard delivering it to us. "The sooner UMB gets here, the sooner our cable bills will go down, and the faster our iPhones will work," Chua quipped.

by Jamie Lendino

What UMB Can Do

UMB beats current technologies such as EVDO (Evolution Data Optimized) and HSDPA (High-Speed Downlink Packet Access), two of today's high-speed wireless cellular networks. Analysts are already predicting speeds approaching 8Mbps in real-world use, a rate that's nearly a hundred times faster than average speeds over current mobile data networks. UMB is also faster than cable, DSL, and 802.11b Wi-Fi. With enough capacity

and reasonable pricing, UMB could replace your home data connection as well, though that's quite a ways down the road.

Compared with WiMAX, UMB will be faster, but it likely won't hit the market until later. UMB was also designed as a mobile solution from day one, whereas WiMAX was pieced together from existing wireless technology and extended with a new mobile layer. "In terms of its development, WiMAX is an

evolutionary phase of taking a wireless technology from point-to-point, to point-to-multipoint, and finally to true mobility," says Godfrey Chua, research manager for wireless and mobile infrastructure at IDC. "That's the evolutionary path for WiMAX, which contrasts a little bit with cellular technologies such as EVDO, GSM, and UMTS, which have always been about mobility from the ground up."

UMTS

TODAY'S STANDARD, TOMORROW'S PROMISE

Ask any telecommunications expert to explain 4G wireless, and he'll likely tell you it has yet to be formalized—or even fully defined—but that common consensus says it will probably involve mobile data transmission speeds that exceed 100Mbps. Ask that same expert to explain 4G UMTS (Universal Mobile Telecommunications System), and he'll probably say UMTS is not 4G, but it might be some day. That's because today, UMTS is a popular 3G standard. It's an outgrowth of an older cellular standard called GSM (Global System for Mobile Communications), even though it now employs technologies and an air interface that are not GSM-based or -compatible.

However, the 3GPP LTE (3G Partnership Project Long Term Evolution) group is working on recommendations for UMTS Release 8. It may offer connection speeds even greater than 100Mbps, thereby lifting it into the proposed realm of 4G. Because current 3GPP LTE theory

regarding UMTS Release 8 involves technologies that use the term "Evolved UMTS," we'll use that term to refer to the 4G UMTS standard, as well.

History Lesson

Because UMTS is an evolutionary product, explaining its future is easiest if we put it in the context where you have been and currently are seeing it. If you'd like to skip straight to the forward-looking bits, jump to "The Far Horizon" in this article.

On the road to UMTS, GSM evolved into EDGE (Enhanced Data Rates for GSM Evolution), with peak data rates of 170Kbps; average speed of 75 to 135Kbps. Barely a year later (in July 2004), AT&T Wireless (at the time, a Cingular competitor) and Motorola announced the launch of the first UMTS network and device: the oversized Motorola A845. UMTS was fully 3G and its device was dual-mode, so users could switch to a GSM/GPRS/EDGE network if they

moved out of UMTS range. (GPRS stands for General Packet Radio Service, an interim step between GSM and EDGE.)

Early UMTS ran on WCDMA (Wideband Code-Division Multiple Access; some companies currently use this term interchangeably with UMTS). WCDMA uses wider data channels and other enhancements to achieve higher speeds (average data speeds of 220 to 320Kbps; bursts up to 384Kbps) and support more simultaneous users than previously possible. AT&T Wireless rolled out the network in Detroit, Phoenix, San Francisco, and Seattle. "With the build-out of the UMTS network, we are offering a variety of devices . . . [with] speeds rivaling those of some broadband services," said Eric Updyke, vice president, 3G Program Management, AT&T Wireless, at the announcement.

Up To Speed

In March 2005, Cingular (which acquired AT&T Wireless and its UMTS network in October 2004) promised U.S. consumers that a newer, much faster variant of UMTS was in the works. Cingular

UMTS Buzz

The end-all, be-all Web site for UMTS and other GSM-based technologies in the Western Hemisphere, with white papers, statistics, and other valuable updates, is 3G Americas (www.3gamericas.com). Another site that is filled with information, if a bit hard to navigate, is the 3GPP site (www.3gpp.org). For current (3G) UMTS information on a global scale, head to UMTS Forum (www.umts-forum.org).

and other companies had been trial-testing HSDPA (High-Speed Downlink Packet Access), an upgrade from WCDMA that enabled theoretical speeds of more than 14Mbps, although data delivery to individual handsets would max out at 1.8Mbps and more likely be 400 to 1,000Kbps.

With its acquisition of AT&T Wireless, Cingular became the nation's largest carrier with 50 million subscribers. However, it faced intense pressure from No. 2 carrier, Verizon. Verizon's EVDO (Evolution Data Optimized) broadband wireless system offered data delivery speeds of 500 to 800Kbps and was already in more than 30 cities. Cingular's acquired UMTS network served only six cities.

Cingular promised 15 to 20 cities by the end of 2005, with both wireless cards (for laptops) and at least one mobile phone available. (Existing UMTS phones did not

support the HSDPA upgrade.) By March 2006, when AT&T and Bellsouth-Cingular agreed to merge, Cingular had demonstrated an even faster variant of HSDPA with a wireless card that could deliver data at more than 3.6Mbps. (The company expected average data delivery to be around 2Mbps.)

Here & Now

As of August, AT&T Mobility's Broadband Connect enables simultaneous voice and data connections (the only high-speed U.S. cellular network to do so) with data delivery speeds generally around 400 to 700Kbps. Faster speeds are possible with newer devices and wireless cards; users report the MotoRazr V3xx (which has the 3.6Mbps chip) attains constant speeds of nearly 1Mbps and bursts over 1.5Mbps at times of low network usage. Latency is also very low.

T-Mobile has been promising a UMTS network in the U.S. for some time, but shortages of radio spectrum (which carry the transmissions) and other issues have left T-Mobile far behind AT&T-Cingular in this country. In July, the FCC approved an HSDPA-compatible phone, the HTC Cavalier, and some reviewers dubbed it a successor to the T-Mobile Dash. The approval fueled speculation that an announcement by T-Mobile about an upcoming HSDPA network might be forthcoming.

However, as of mid-August, such was not the case. This is likely quite frustrating for T-Mobile's U.S. customers, as the carrier operates numerous HSDPA networks overseas. These networks widely support speeds of as much as 3.6Mbps, and T-Mobile promises 20Mbps HSDPA wireless cards in Europe by 2011.

What You'll Do With UMTS

At speeds above 200Kbps, real-time videoconferencing; high-end gaming; VoIP (Voice over Internet Protocol) calling; and mapping services with real-time, point-to-point instructions become feasible. So what more can you do with 100Mbps that you cannot do with 400 to 1,000Kbps?

Current data rates suffer when a lot of users are on a network, and as more users download data, the problem will accelerate. When a network has a maximum 100Mbps throughput, you won't be obtaining 800Kbps download speeds only at 5 a.m. when no other users in your cell are accessing their data plans. You'll be seeing data rates closer to 2 to 4Mbps, and if the 3GPP LTE folks succeed in obtaining their optimum goals, you could enjoy rates of as much as 10Mbps at times. A speed that high would enable you to download an average (600 to 700MB) movie in about 12 minutes, rather than three hours.

"The main benefits I hear center around extremely high throughputs for data services; high enough speeds... for good-quality multimedia streaming while on the go, in the car, on the train, in the house, and at work," says Gemma Tedesco, In-Stat senior analyst, Cellular & Wireless Broadband Technologies. "Initial products may be targeted toward mobile PCs."

Who's Testing The Waters

AT&T Mobility trialed HSUPA, the "next big thing" on the horizon for UMTS (before 4G) in late 2006 but has not yet integrated it into its networks. Samsung successfully demonstrated HSUPA in December 2006 at Hong Kong's ITU Telecom World.

The demonstration reached speeds up to 2Mbps for uplink and 3.6Mbps for downlink (real-world speeds will be somewhat lower). The company is partnering with Orange to debut HSUPA phones in Europe this year; however, there are no known phones on the horizon for HSUPA in the U.S. Mobilkom Austria was the first carrier to go live with HSUPA (with wireless cards, not mobile phones) in February of this year in Vienna.

"LTE, as far as vendors have told me, has excellent prospects, as it has the force of 3GPP behind it," says In-Stat Senior Analyst Gemma Tedesco. "Most GSM/EDGE and WCDMA/HSPA carriers are expected to upgrade to it. LTE might even get some pick-up from traditional CDMA [Code-Division Multiple Access; the technology used by Sprint and Verizon] carriers that don't want to deal with Qualcomm anymore. Ericsson, LTE's main cheerleader... is really aggressive in trying to get HSPA into mobile PCs, because I think the company is fearful that 802.16e WiMAX will be adopted into mobile PCs on a large-scale by the 2010/2011 timeframe."

Tedesco also notes that mobile device manufacturers such as Samsung are positioning themselves to "embrace at least two possible 4G technologies." (One of Samsung's will undoubtedly be WiMAX, because it pioneered WiBro, the Korean variant of the technology.)



Early UMTS phones, such as the Motorola A845, were bulky compared to comparable non-UMTS models.

AT&T's LG CU500, paired with an HSDPA (UMTS) connection, enables customers to send a live video stream while on a phone call.

The sleek MotoRazr V3xx supports the fastest variant of UMTS available in this country.

What UMTS Can Do

At its core, Evolved UMTS is an ultra high-speed data protocol like Mobile WiMAX and other 4G competitors. However, a recent Frost & Sullivan report noted that LTE products such as Evolved UMTS have better performance characteristics than Mobile WiMAX. This is particularly true for the 802.16e variant rolling out this year. (Mobile WiMAX won't be truly 4G until its specification, 802.16m, is completed, which likely won't happen until 2010.)

Per the 3GPP LTE's published goals, Evolved UMTS optimally operates over cellular networks with a cell size of 5km. However, it will support up to 30km cell sizes with reasonable performance and 100km cell sizes with acceptable performance, which could give it very wide coverage even in areas with few cell towers. The 3GPP LTE also calls for it to coexist with legacy GSM standards. Users should be able to initiate a call or data transfer in an Evolved UMTS area and not lose the connection if they move into an older GSM/GPRS/UMTS coverage area.

Goals of the group call for the standard to be very efficient, supporting 200 active users per 5MHz cell. The technology it uses also enables considerable spectrum flexibility, with slices of bandwidth as small as 1.25MHz or as great as 20MHz. This could be a substantial benefit in an increasingly spectrum-challenged marketplace, but it could also cause compatibility problems in areas where 5MHz bandwidth allocations are already common.

Unfortunately, HSDPA's upload speeds are capped at 384Kbps for even the fastest variant of HSDPA, which is a dismal number for a super high-speed technology. In the works is a partner technology to HSDPA called HSUPA (High-Speed Uplink Packet Access). In tandem, the two are HSPA (High-Speed Packet Access). HSUPA promises to improve upload speeds to a theoretical limit of 5.7Mbps, although as with all wireless technologies, real-world speeds will likely be considerably lower.

The Far Horizon

3GPP LTE representatives say they expect the group to make recommendations for UMTS Release 8 this fall. One focus of the emerging standard is the incorporation of a new OFDM (Orthogonal Frequency Division Multiplexing)-based technology, EUTRAN (Evolved UMTS Terrestrial Radio Access Network) which uses signal modulation over multiple channels and other advanced techniques. At the same time, 3GPP is progressing on a new IP

(Internet Protocol) core network that will support EUTRAN (the combined technology is called EPS [Evolved Packet System] Architecture).

In the long term, this architecture should enable Evolved UMTS to provide higher data rates, spectrum efficiency, and reduced latency, with theoretical downlink throughput as high as 326Mbps; well within the expected 4G parameters. According to 3G Americas (www.3gamericas.org), a GSM/3G-advocacy organization, the first field trials are planned for 2008, with commercial availability in 2009.

However, David Chamberlain, principal analyst, Wireless, for research firm In-Stat, says, "I'd suspect that it's going to be at least five years before LTE is available on a widespread commercial basis. Back in 1999, when most analysts were forecasting 3G to blanket the earth by 2003, I was saying 2006 would be much more realistic. They were wrong." Gemma Tedesco, In-Stat's senior analyst, Cellular And Wireless Broadband Technologies, says that even

then, users will find "very high-speed data services [only in] hotzones such as dense urban areas. Most vendors/carriers . . . envision their EVDO and HSPA networks existing for many years, through 2015 and beyond, while 4G networks will be built out slowly."

by Jennifer Farwell

The BlackBerry Calendar

Take A Closer Look At This Handy Application

Think most calendars are pretty straightforward, unexciting apps? The tips below might help you see the BlackBerry Calendar in a new light.

Most of these tips are dependent on the version of the BlackBerry OS you're using and not so much the actual device. Because there are many BlackBerry devices, we will use the word "menu" to mean bring up the menu, which you do by either using the Menu key or clicking the scroll wheel.

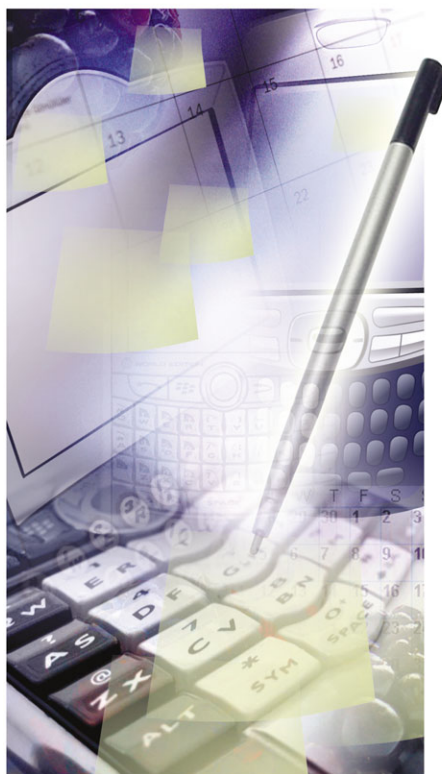
A Calendar View Of Your Tasks

Using two different applications, Calendar and Tasks, to maintain separate information about activities has always been a bit of a nuisance. If you use BlackBerry OS 4.1 or later, however, you can use the Calendar application to display your Tasks.

Start by enabling Tasks in the Calendar Options. Open Calendar and then open the application's menu. Select Options and then scroll down and select Show Tasks.

Here's a tip within a tip: Press the Spacebar to toggle through the list of possible selections. For example, in Show Tasks, the Spacebar will toggle between No and Yes. Change Show Tasks to Yes. Bring up the menu and select Save. That's all it takes to configure the Calendar to show Tasks.

Well, almost. For Tasks to display in Calendar, they must have an assigned Date Due. Start the Tasks application, open the menu, and select New. Enter the task information, including a due date. When you're done, open the menu and select Save. (You can also edit any existing tasks that don't have an assigned due date.)



Go back to the Calendar again. In Day view, any Tasks with an assigned Due Date will appear as Calendar entries with a clock next to them. You can select and edit any Tasks that display in the Calendar, including a task's priority.

Even better, the task entries in the Calendar can display priority and status. In Day view, the Calendar displays an icon to distinguish priority, with a red exclamation point denoting high priority and a downward-pointing arrow denoting low priority. In Week view, the Calendar displays a task's status.

Sticky View

You can select any Calendar view (Day, Week, Month, Agenda) as the default view. The problem many of us have is that we don't want the same view every time we open the Calendar application. We would rather set Calendar to remember how we left it the last time we used it. We're in luck because one of the Calendar Options sets it to remember the last view.

Open Calendar and then open its menu. Select Options and then select Initial View. Use the Spacebar to toggle through the list of options until Last appears. Open the menu and select Save. The Calendar will now always display in the last view you used.



If you include a phone number in an appointment or task, the BlackBerry will recognize the number and be ready to make the call for you.



The BlackBerry Calendar application can display Tasks. Here, the Tasks are shown with a clock icon, as well as an icon that denotes priority.



Quick Entry changes how the Calendar responds to many keyboard shortcuts. To turn Quick Entry on or off, use the Calendar Options.

Change The View With A Tap

Now that the Calendar application uses the last view as the default, it might be a good time to find out how to quickly change views without needing to open any menus and make selections.

The following shortcuts will work, provided you have Enable Quick Entry set to Off in the Calendar Options menu:

- D:** Daily view
- W:** Weekly view
- M:** Monthly view
- A:** Agenda view

When the Agenda view is displayed, you can use the D, W, and M keys to quickly jump to Day, Week, or Month view, regardless of the Enable Quick Entry setting.

More Keyboard Shortcuts

Once again, these shortcuts will only work when Enable Quick Entry is set to Off in the Calendar Options.

- T:** Moves to today's date.
- G:** Moves to a date you specify.
- P:** Navigates to the previous week in Week view.
- N:** Navigates to the next week in Week view.

The following shortcuts will work regardless of the Enable Quick Entry setting.

- 4:** Moves to the previous day.
- 6:** Moves to the next day.
- 8:** Moves to the previous hour within Day and Week view or to the previous week in Month view.
- 2:** Moves you to the next hour (Day and Week view) or the next week (Month view).



The Calendar offers four default views (Day, Week, Month, and Agenda), plus Last view, which will always start the Calendar in the view it was in when you last used it.

Also, pressing ALT-scroll wheel/trackball will advance you a day or a week, depending on the Calendar view you're using.

This Is Your Calendar Calling

Appointments in Calendar may be reminders to call someone. It's a bit of a waste of time to set the Calendar to remind you to call Marvin and then have to go to your address book to look up the number and make the call. Instead, add the phone number to your Calendar entry as part of the subject. For example, type **Call Marvin at 555-1212**. When the Calendar alarm goes off, you can open the Calendar appointment and the phone number will be highlighted. Select the highlighted text and open the menu, which will include the option to call or send a message via SMS (Short Message Service) to the highlighted number.

Quick Entry Tips

Using the Quick Entry option is, well, quick, but with these additional tips it may be even quicker. For these tips to work, Enable Quick Entry must be set to On in the Calendar Options.

To add a new entry to your calendar, simply roll the scroll wheel/trackball to the hour at which you want the entry to start and then start typing the name and description of the new appointment.

The rest of these tips assume that you have already started an entry as shown above:

To change the start time, hold down the CAPS or SHIFT key and roll the scroll wheel/trackball. This will let you change the start time in 15-minute increments.

To change the stop time, roll the scroll wheel/trackball without holding down the CAPS or SHIFT key.

You can enter location information with Quick Entry by placing the information within parentheses, for example, "Department Meeting (Conference Room 2)." Any text in parentheses will be assigned the Location attribute when using Quick Entry.

by Tom Nelson and Mary O'Connor

NEWS BRIEF

Yahoo! Mail Emerges From Beta

After spending nearly two years in beta, Yahoo!'s new email service has officially launched. In addition to drag-and-drop and email sorting features common in desktop email clients, the new Yahoo! Mail offers a striking new feature: text messaging. Yahoo! Mail users can now exchange text messages directly with mobile phones in real time. The new service is currently available in the U.S., Canada, India, and the Philippines.

by Seth Colaner

NEWS BRIEF

Boost Mobile & Telmap Deliver New GPS Service

Boost Mobile announced its new GPS service, Boost Navigator. Powered by Telmap, Boost Navigator gives its customers turn-by-turn directions, whether on foot or in the car, as well as the ability to search for and store information about specific locations or attractions. Boost Navigator is available to Boost customers from www.boostlive.com. Pricing options include \$1.99 per day, \$3.99 per week, \$9.99 per month, or \$24.99 for three months for unlimited routes.

by Seth Colaner



Busy lives can make it tough to keep track of or memorize all appointments, tasks, and contact information. Thanks to PDAs, we have a backup brain to do most of the memorizing for us. But how well can it do its job if we don't keep its memory in good health? Just as immunizations prevent us from becoming ill, taking proactive steps can prevent potential memory problems.

Check The Memory

When the memory is full or almost full, it slows down the device's performance and wastes our precious time. Check how much available memory remains on your Palm OS device by tapping Applications. Open the menu and choose Info from the App menu. The amount of free space indicates the amount of memory left. You can check the memory available on an external card by tapping the arrow next to Device and choosing the card from the list.

From this same Info screen, you can also view the size of the applications on the handheld and expansion card. Make note of the larger applications; if you don't use them often, it may be beneficial to delete them or at least move them to an expansion card. If available, be sure to check Photos on

Manage Your Palm's Memory

Keep Your Backup Brain's Memory Sharp

the list, as it tells you how much space your photos take. Otherwise, you can also determine the size of various media files by reviewing them within their respective applications.

If you receive a low memory error message and have confirmed that the device has plenty of room, contact the software developer of the application that's giving you the memory error message. The application may have an update available, or its developers may provide suggestions to correct the problem.

Cleaning The Memory Cobwebs

You might have applications, files, and old records on your Palm's built-in memory that you don't need anymore or that should move to the external card. Try these tasks to clean out the device's innards.

Delete old applications and items. Consider deleting applications that you never use or rarely use. To delete an application, tap Applications and open Menus. Select Delete. Select the application and then tap Delete. You can also use these steps to delete items from the expansion card; simply select your card from the Delete From field. You can always retain a copy of an application on your desktop for later use.

Purge old items. The Palm Desktop retains old data purged from the handheld, so it's not gone for good if you delete it from the handheld. Although you won't have access to old records, purging them takes a load off the memory. You can purge calendar items, tasks, expenses, memos, and emails. Purging emails is particularly worthwhile because email messages with attachments are especially

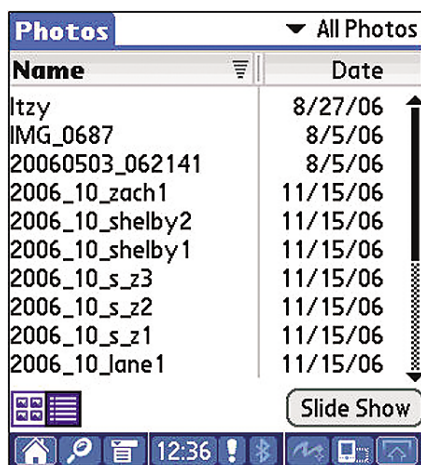
demanding of memory. The steps to do a purge vary based on the device, but the following examples are the most common steps. For calendar items, go into the Day view, select Menu (tap the top of the screen), and then tap Purge. For tasks, go to Tasks, select Menu, and then tap Purge.

Clear duplicate items. If you've upgraded your handheld several times or updated a record in two places (such as on the desktop and handheld), you might have duplicate records. It's easier to delete duplicate records manually through Palm Desktop. For example, click Contacts and switch to the List tab. Scroll down to find duplicates. Click a duplicate once and press Delete. Software for deleting duplicates, such as Undupe (\$9.95; www.stevenscreek.com/palm/undupe.html), can expedite the process.

Empty the browser cache. Like a desktop Web browser, a Palm device's



Check the Info screen to see how much space your applications take up on the handheld device.



Open media applications, such as Photo, to check the file sizes of photos, videos, and audio files since they're often memory hoggers.

browser caches data from Web sites to reduce the download time. The steps required to empty the cache may vary based on the browser, but you can generally get there from the Web browser's menu under Options and Preferences.

Use External Memory

Moving large applications and items you don't access often to an external card can help free space on the device. In particular, moving videos, music, photos, software, and ebooks to an expansion card is a good practice for unburdening your device's built-in memory.

To move an application to the expansion card, first ensure the expansion card is properly inserted. Go to the Applications screen and open the App menu. Select Copy and then select the expansion card from the Copy To list. Highlight the application to copy to the card, tap Copy, and then tap Done. After the application is moved to the expansion card, return to the App menu to delete the application from the handheld.

Palm (www.palm.com) sells memory expansion cards ranging from 128MB to 2GB in size. The smaller expansion cards support older models, such as



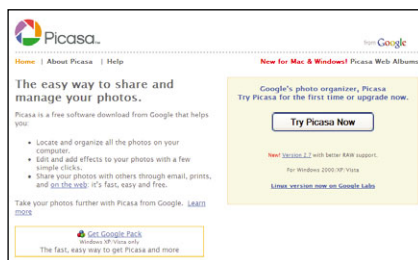
Relieve your handheld of some memory by moving unnecessary files and applications to a memory expansion card.

the m505 and Zire 31. The 512MB, 1GB, and 2GB cards work with devices containing a miniSD or SD/MMC expansion slot, which includes most modern devices. See the Palm store for prices as they vary based on the size of the card.

Adjust Photo Resolution

Handhelds with a built-in camera take photos in JPEG format to compress the images and save space on the device or expansion card. The resolution of the photo and the amount of details affects the file size: the lower the resolution, the smaller the file size.

Before downloading photos to the device or expansion card, consider resizing them before doing so; there's no need to store high-res photos on your handheld when a lower resolution is adequate for viewing. Create a copy of



Picasa, a free photo-editing utility from Google, lets you quickly and efficiently resize your photos. Reducing the size of the photos stored on your handheld is an excellent technique for freeing up space.

your high-res photos and store the originals on your desktop. Resize the copies and add "sm" or "palm" to the file name to indicate the photo is small or for the Palm to distinguish between the two files. Copy the resized files to your handheld and delete the high-res versions from the mobile device.

Many free Web-based applications and services let you resize a photo, including Flickr.com, Photobucket.com, and Google's Picasa. Photo-editing software, such as Adobe Photoshop or Microsoft Paint, also has resizing options.

by Meryl K. Evans

NEWSBRIEF

AAA On Your Mobile Phone

AAA announced that its proprietary travel information, mapping expertise, and road service will soon be available on select GPS-enabled phones. Called AAA Mobile, it's designed to provide users with audible, turn-by-turn directions and other AAA information, such as Diamond Ratings for hotels, restaurants, and other points of interest found in AAA's Tour-Book guides. Sprint is currently the sole supported carrier, with more to be added in the future. Networks In Motion, the company with the largest mobile phone navigation subscriber base in North America, is the power behind AAA Mobile.

by Tessa Breneman

NEWSBRIEF

Are You A Mogul?

Whether or not you're a mogul, you can now own one. A Mogul by HTC, that is. Currently available exclusively through Sprint (www.sprint.com), the Mogul is a Windows Mobile 6-running smartphone with a slide-out QWERTY keyboard, 2MP camera with 8X zoom and camcorder, Bluetooth, built-in Wi-Fi, and more. We took it on the road and enjoyed high-speed EVDO Rev. A for mobile Internet access, as well. Get it with a Phone As Modem Service Plan, and you can use a USB cable or Bluetooth to bring that high-speed Web access to your notebook.

by Calvin Clinchard



Maximize Your Nokia

The Business End Of Nokia Smartphones

Your Nokia is your lifeline. Family, friends, business contacts, and co-workers are just 10 digits away no matter where you happen to be. But you didn't get a smartphone just to talk. Nokia smartphones running on the S60 platform are packed with productivity tools and features to help you take care of business on the road, in the air, or—if you're taking a much-deserved break—on the beach. Read on to get smartphone savvy with your Nokia.

Optimize & Conquer

Nokia offers a range of smartphones based on the enterprise-friendly S60 3rd Edition platform, including the latest Eseries smartphones, such as the E61i, E65, and E90. These business-capable phones come with loads of features designed to give you an edge on the road. Follow these simple tips and, before long, you'll be confident in spending even more time away from the office.

Manage memory. Nokia's S60-based smartphones typically come with between 50MB and 128MB of built-in memory, which is enough to store a handful of ringtones, documents, photos,

applications, and songs. For most users, though, that just isn't enough, so Nokia gives you the option to add additional memory in the form of a miniSD or microSD memory card. (Consult your phone documentation for acceptable formats and compatible memory brands.) Adding memory is also a good idea because some S60 applications, such as the calendar, Java games, third-party utilities, and text messages, temporarily snag some of the phone's internal memory, reducing the amount of free memory available.

To add memory to your Nokia, you need to locate the memory card slot and insert a compatible memory card as indicated in your phone's users manual. To add memory to a Nokia E61i smartphone, you need to first power down the



The Nokia S60 3rd Edition-based smartphone is a must-have tool for any business traveler.

phone. Next, disconnect the phone from the charger and/or USB cable and press the cover release button on the back of the device to disengage the cover and expose the microSD slot. Orient the microSD card with the contacts facing down and insert it into the slot until you hear a quiet click. Replace the cover and turn on your phone.

To free up your phone's memory by deleting unnecessary applications, launch the Application Manager. Start by pressing the Menu key, selecting Installat., and pressing the Navi scroll key. Next, press the Navi scroll key on App. Manager, select the application you want to delete, and then press the Left Selection key labeled Options. Next, scroll to Remove, press the Navi scroll key, and then press the Left Selection key now labeled Yes to delete the selected application.

If you have a memory card, it's a good idea to regularly back up your phone data. To do this on your S60-based Nokia, press the Menu key and select Tools, Memory, Options, Backup Phone Mem., Select, and then Yes to create the backup. To restore the phone data, open the Menu and select Tools, Memory, Options, Restore From Card, and then Yes.

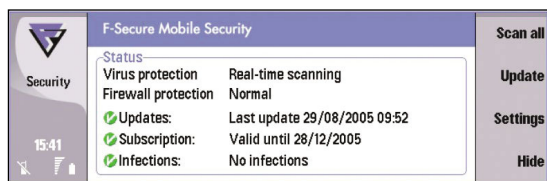
Don't Leave Home Without 'Em

Your hardware is only as useful as the software installed on it. We looked at a few applications that will turn your snazzy smartphone into a portable productivity powerhouse.

F-Secure Mobile Security

\$34.95 • mobile.f-secure.com

As someone who relies heavily on your smartphone for conducting business, you can't afford to have your phone out of commission due to a virus or malware infection. A particularly nasty virus can even compromise your sensitive data or ring up phone bills you literally can't afford. F-Secure took its virus-fighting and malware-blocking expertise gleaned from the trenches of the desktop market and applied it to the



F-Secure Mobile Security combines antivirus scanning and a firewall to keep your smartphone safe.

smartphone sphere with F-Secure Mobile Security. F-Secure offers a one-year virus signature update subscription (\$34.95) that keeps your smartphone locked up against the latest and greatest threats. The software employs an integrated firewall and real-time antivirus scanning to protect your phone from attacks, malicious applications, and infected messages. F-Secure Mobile Security also scans memory cards for potentially harmful code and immediately quarantines the contaminated culprit upon detection. After you install the application (accessible from the F-Secure Web site), your smartphone automatically updates the antivirus database over a secure HTTPS data connection or incrementally with SMS messages. F-Secure offers a free 30-day trial.

MobiMate WorldMate Professional Edition

\$49.95 • www.mobimate.com

If you've flown recently, you probably spent more than your share of time nibbling egregiously overpriced Paninis and pacing the terminal while waiting for a delayed flight. With MobiMate's WorldMate Professional Edition, you can stay a step ahead of the game by checking flight times and status, browsing weather conditions and forecasts, consulting flight schedules, and more. The base application (which lets



MobiMate WorldMate Professional Edition can be a real time-saver when you're traveling.

you use the world clocks, currency converter, visual and vocal weather reports, weather forecasts, and world maps) is free. To take advantage of the real-time flight status views, satellite weather imagery, and flight schedules, you need to upgrade to a Professional Edition subscription.

To install WorldMate Professional Edition, navigate your mobile browser to mobile.mobimate.com/s60.

Symbian Guru Expenses

\$9.99 • www.symbianguru.com

Business travelers are expert multitaskers out of necessity. But once you get back from your latest harried trek across the country, the last thing you want to do is collect receipts and submit an expense report. Symbian Guru gives you a break with Expenses, a mobile finance utility that helps you sort and manage your expenses on the road and send a complete expense report directly to the email address



Symbian Guru Expenses makes writing expense reports simple, fast, and convenient.

of your choice. The software lets you separate expenses by type (food, taxi, entertainment, hotel, and so on), date, payment method, category (business, personal), and time. You can even add notes for each expense and export the expense report as an MS Excel document. The full version costs \$9.99, but Symbian Guru offers a 10-day free trial. To install Expenses, you may need to manually allow the installation of unsigned SIS files. To do this, press the Menu key and select Tools, App. Manager, Options, and Settings. Change the Software Installation setting to All and the Online Certif. to Off. This will prevent the certificate error from appearing when you attempt to install Expenses.

by Andrew Leibman

NEWSBRIEF

Microreview: SanDisk Cruzer Professional

This handsome, speedy USB flash drive in SanDisk's (www.sandisk.com) Business Products line currently comes in 1GB (\$54.99) to 4GB (\$144.99) capacities. It has an understated, no-nonsense design that will look completely at home in a boardroom. The Cruzer Professional has a lanyard loop on its body and a pocket clip on its snug, removable cap. Business is business, of course, and so SanDisk includes hardware-based encryption with which you can create a private, password-guarded partition on the Cruzer Pro. Set up a secret storage area on the drive using your Windows 2000 SP4 PC/2003 Server/XP SP1/Vista, and your company's proprietary information will be protected with 256-bit AES encryption. This feature is a snap to use with the utility preinstalled on the drive. SanDisk says that the Cruzer Pro is compatible with Vista's ReadyBoost caching feature. This compatibility may come in handy later should Microsoft improve ReadyBoost enough to make it worthwhile. In the meantime, the Cruzer Pro offers fast, encrypted storage in an attractive package.

by Marty Sems



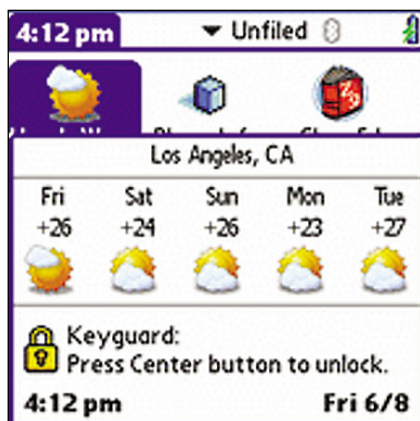
New & Updated Mobile Software

Stay Ahead Of The Mobile Curve With Current Software

Most applications allow you to try before you buy, so check them out to see if they're right for you before shelling out the cash.

New Titles For Palm OS

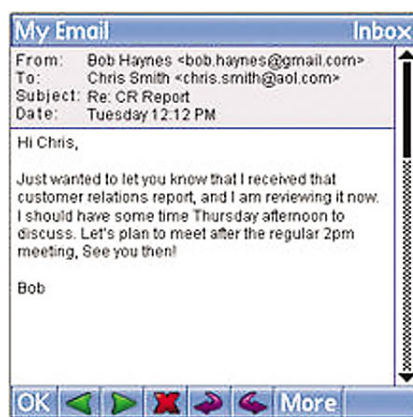
Paragon Software's **Handy Weather** (\$14.95; palm-software.penreader.com) turns Treo devices into handheld weather stations to help users deal



Tune into the weather station without a radio or TV using Handy Weather.

with unpredictable weather. The application notifies the user of climate changes and weather conditions, including temperature, wind direction and speed, UV index, and more, for up to 40,000 cities.

Treo users have another choice for an email application in Wolflane Software's

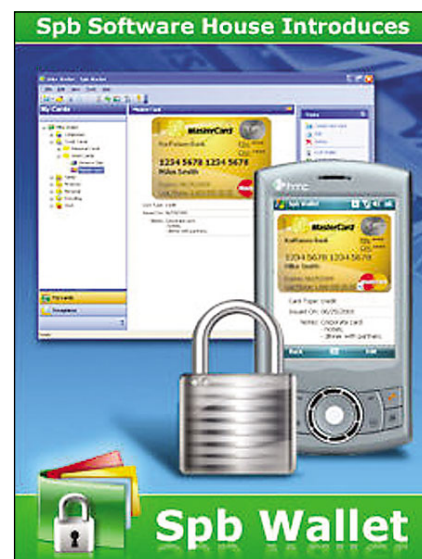


Krome contains a simple interface for easy email management on your Treo.

Krome (\$16.95; www.wolflanesoftware.com), which supports POP3 and IMAP accounts. Krome helps users get going with its guided setup process and saves space by storing messages on an external memory card. It also has the ability to download new email messages in the background as users read and compose messages.

New Windows Mobile Titles

Travel-related applications look like they're hot, as another one has hit the mobile market. Spb Software House's **Spb Traveler** (\$29.95; www.spbsoftwarehouse.com) for Windows Mobile 2003 and later comes with the usual tools such as weather forecasts, unit and currency converters, a flight assistant,



Protect your private financial information with Spb Wallet.

and even a game to pass the time. Its database contains over 10,000 cities. With the Spb Traveler Today plug-in, you can view city information for an upcoming business trip on the Today screen for easy access.

Spb Software also introduces **Spb Wallet** (\$29.95), an application for tracking and protecting your personal and business information, including bank accounts, credit card information, and passwords.

A time-tracking application for the self-employed and small businesses, **TimePanic** (\$74.12; www.timepanic.com) synchronizes your computer and Windows Mobile device. It tracks hours based on projects, absences, and overtime.

Chapura has released **CallsToJournal** (\$19.95; www.chapura.com) for smartphones and Pocket PCs running Windows Mobile 5 and 6. Track conversations by uploading the phone call log from your handheld to PC as Outlook Journal entries. CallsToJournal also links the Journal entry to the Outlook contact involved in the phone conversation.

Windows Mobile smartphone users can punch in and out of work with AcroDesign Technologies' **TimeLogger** (\$9.95; www.acrodesigntech.com), an application that tracks time on projects, clients, and tasks. It allows for the tracking of multiple projects and clients,

runs multiple timers, calculates rates, and produces reports.

New Titles For Multiple Platforms

Because the mobile edition of Skype is not available for BlackBerries, **iSkoot** (free; www.iskoot.com) makes it possible for users to make and receive Skype calls through their BlackBerries. To start using Skype on a BlackBerry, point your BlackBerry's browser to the iSkoot Web site to download the client and log in using a Skype account.

Owners of S60 3rd Edition smartphones can view Microsoft Word, PowerPoint, and Excel documents with **Quickoffice V4.5** (\$19.95; www.quickoffice.com).

Apple iPhone users can participate in a voice and audio meeting from their phones through iPhone's Safari browser. Genesys **Meeting Center v4.0** (www.genesys.com/iphone) lets participants view all viewable Desktop applications on the iPhone, as well as view other participants. Contact the company for price information.

DDH Software has released a BlackBerry version of **HandBase** (\$39.99; www.ddhsoftware.com), a relationship database application. HandBase Professional for BlackBerry offers users a bidirectional Microsoft Access conduit, multiuser syncing, and more. See the company Web site for platform-specific price information.

Updated Software

Kinoma Player EX v4.2 (\$24.99; www.kinoma.com) supports streaming Flash video from YouTube and Google Videos for Palm OS devices. V4.2 speeds performance, improves online media guide caching, and provides more TV and radio stations. Upgrades cost \$14.99.

Do you wish the Windows Mobile device interface worked differently? With Spb Software House's **Spb Mobile Shell 1.5** (\$29.95; www.spbsoftwarehouse.com), you can enjoy a more modern interface that includes a new layout for the Now screen, menu customization options, and use of the Now screen as a lock screen.

Administrators who use Telnet and SSH1/SSH2 terminal can access them on

their handheld devices with Idokorro Mobile's **Mobile SSH 3.1** (www.idokorro.com). The application works with BlackBerry's Nokia Series 60/80, Motorola, and Sony Ericsson devices. Mobile SSH receives support for Bluetooth connections, performance enhancements, and policy customization for those on BlackBerry Enterprise Servers. See the Web site for pricing information.

Synchronize your mobile devices with **PDAsync version 4** (\$49.95; www.laplink.com), a Windows Vista-compatible



HandBase, a relational database application, now offers support for BlackBerry handsets.

application. The new release includes support for Microsoft Outlook 2007 and Novell Groupwise, as well as performance enhancements and a new, user-friendly interface.

Motorola's Good Technology Group released an upgrade of their Good Mobile Messaging mobile communication app. Version 5 comes with enhanced calendar features, document editing and sending, dialing without a password, conversation and sender message grouping, an RSS reader, and personalized email notifications.

Current **SplashID** (\$29.95; www.splashdata.com) users can upgrade to version SplashID 4.0 for \$9.95. The major upgrade introduces new Desktop views, enhances security, and adds Vista compatibility. You can also create a password hint and instruct the application to lock after 10 incorrect password attempts.

Palm **Treo 750** (www.palm.com/sup) port) devices also receive an update to fix an audio bug for those using the AT&T version. The bug causes the smartphone to stop making a sound for

incoming calls or appointment alerts.

Users of Nokia phones with **PC Suite synchronization** (www.nokiausa.com/A4494165) who upgrade to the latest version will get file and folder synchronization capabilities, along with minor performance enhancements and bug fixes. Also, Nokia **N800 Internet Tablet OS Update** (tablets-dev.nokia.com/nokia_N800.php) receives Skype and SDHC card support in its latest major update.

Sony Ericsson **P990** and **WP950** (www.sonyericsson.com) receive a software update through the Sony Ericsson Update Service. The company hadn't announced what will be in the update as of press time.

Google adds speed improvements, real-time traffic reporting, new icons, and detailed directions to the latest version of **Google Maps for PalmOS v1.2.0.8**. Users can download the update through the Treo's browser by going to google.com/gmm/treo.

Now with command line support, Aiko Solutions **SecuBox for PPC v1.2** (\$39.95; www.aikosolutions.com) integrates better with Windows Mobile File Explorer. Using industry-standard AES 256-bit encryption, the application protects private information without slowing device performance.

TeleNav GPS Navigator 5.2 (www.telnav.com) lets users send their current location to another mobile phone through text messaging. Another feature is the ability to search for the cheapest gas prices at nearby gas stations. The service costs \$9.95 per month for unlimited use.

Popular free mobile Internet service **Skweezer 4.0** (www.skweezer.net) changes the mobile searching tool for more relevant results, adds a Find In Page feature, and optimizes images to reduce file sizes.

Out of beta, Sling Media's **SlingPlayer Mobile v1.0** (\$29.99; www.slingmedia.com) lets Slingbox owners watch a live TV stream from their cable box, satellite receiver, or DVR on their Windows Mobile or Palm OS device. The updated software now includes support for Windows Mobile 6.

by Meryl K. Evans

A Posse Of Portable Hard Drives

Backups On The Road

When you're on the road, you need a fast backup device that is small enough to fit in your notebook case. At the same time, you don't want to worry about whether it has enough storage space for all your files.

You're talking about a hard drive, of course. Flash drives top out at 16GB, and you'll pay top dollar for that capacity. Rewritable DVDs are cheap, but they're even smaller at 4.7GB or 8.5GB. BD (Blu-ray Disc) looks promising with its 25GB and 50GB capacities, but until prices drop below their current \$20 (25GB BD-R) mark for each bare disc, there's little incentive to pay through the nose for a BD burner.

Today's 2.5-inch portable hard drives fit easily in the palm of your hand, yet they can supply up to 300GB of fast, reliable storage. For example, Fujitsu recently announced its new 300GB External Hard Disk Drive (\$229; www.fujitsu.com). This 4,200rpm drive couldn't reach us before press time, but it should be available by the time you read this.

To put the following drives through some standard paces, we tested them on a Windows Vista PC with 1GB of RAM, a 2.6GHz AMD FX-55 processor, and USB 2.0. We benchmarked their speeds at various simulated tasks using Futuremark PCMark05 1.2.0 and Simpli Software HD Tach 3.0.4.0. We also timed how long it took each drive to save 1GB of data. This is probably the most relevant test we performed, as the primary duty of most portable hard drives will be data backup. (Each drive was preformatted with the FAT32 file system. HD Tach can't test write speeds on formatted drives.)

Keep in mind that you should never try to carry around a full-sized (3.5-inch) external hard drive with your laptop. These heavy "desktop" drives are more fragile than their smaller, 2.5-inch "notebook" cousins. They're meant to stay put next to a stationary PC or Mac, not be jostled around in your notebook bag or luggage. The rule of thumb: If an external drive isn't marketed as "portable" on its box or manufacturer's site, it's probably not.

Iomega eGo 160GB

\$132.95 • www.iomega.com

Gorgeous. Picture a Southern belle with her creneline a-billowin'. She only has room in her pocket for a single medicinal flask, and she wants it to be as contoured and pretty as possible. Like its owner.

That's the motif of the eGo portable hard drive. Iomega enfolded the eGo in a feminine shell that's tough as nails, yet beautiful. Its matte finish resists fingerprints, although the chromed endcaps will require touchups with a handkerchief ever and anon. A single LED glows a cheerful emerald green during operation, making a very lovely contrast to the enclosure's lipstick hue. We think we're in love.

Iomega endowed this winning beauty with DropGuard, its term for a ruggedization system. With DropGuard, the eGo is able to withstand drops of up to 51 inches, the company says. That's good to know when your important presentation is riding on it.

The eGo is bus-powered through a single USB cable. However, the PC end



of the cable has an additional USB connector, which you can plug in when the drive isn't getting enough power from a single port. On the rear of the drive is a supplemental 5V power port, but there's no corresponding AC adapter in the package. Normally, portable drive manufacturers stop after giving you a Plan B for auxiliary power, so Iomega deserves credit for supplying a partial Plan C, as well. If you need to make use of the 5V power input (namely, if your notebook only has one free USB port and it can't supply enough juice to the eGo), you'll have little trouble locating a suitable adapter in an electronics store.

The hard drive inside the eGo is a 5,400rpm Seagate Momentus 5400.3 with an 8MB cache. Oddly, Iomega doesn't currently offer the eGo in any other capacities. There's no software CD in the package, but included with the drive is a software license for a download of EMC Retrospect Backup. The eGo is compatible with Win2000/XP/64-bit XP Pro/Vista and Mac OS X 10.1.5 or later.

Kanguru 2.5" Combo QuickSilver 40GB

\$84.95 • www.kanguru.com

This 40GB, \$84.95 version of the 2.5" Combo QuickSilver (U2F-HD2-40) kind of stands in the shadow of the 80GB edition, which doubles the available storage for a mere \$15 more. Actually, the 160GB model for \$159.95 is the best choice on a cost-per-gigabyte basis.

Note that these prices are identical to those of the USB-only QuickSilver U2-HD2 series, which doesn't have the "Combo" in its name. In other words, you might as well buy the Combo drive because you're getting free FireWire support. (And if you buy a Combo online from Kanguru's online shop, you also have the opportunity to get a free one-year subscription to one of *PC Today's* sister publications, such as *Smart Computing* or *CPU*.)

The QuickSilver is shaped like a small, thin book, with one edge curved



like a book's spine. The drive will stand up on its flat edge, but it's lightweight enough that the torque from the cable connected to it may be enough to flip it over. The hard drive inside it is a 5,400rpm Toshiba MK4032GAX with an 8MB cache.

The QuickSilver's gloss-black shell is very pretty. However, it's probably admissible as evidence in court due to its propensity to fingerprint its user. In front is Kanguru's long-tailed marsupial logo, which is nicely illuminated in blue. This kangaroo blinks during drive accesses. Four bumps on the bottom of the enclosure act as feet, but they don't have non-skid rubber pads on them, so the drive may slide around on a smooth desktop.

In back are USB Mini and FireWire 400 (IEEE 1394) ports, along with a 5V DC power jack. Kanguru includes both

types of data cables, but like Iomega, it supplies no AC adapter. The QuickSilver can get its power directly through a USB 2.0 or 6-pin FireWire port, as can most portable drives of this size. Also like Iomega, Kanguru opts for a double-headed USB cable in case a second port's power is needed. However, Kanguru's cable one-ups Iomega's because the auxiliary power plug is of a pass-through design, meaning it will allow another USB device to plug through it. In other words, even if your QuickSilver takes two USB ports in order to run properly, you'll really only lose the use of one port.

Usually, the FireWire interface offers slightly faster reads and slightly slower writes as compared to USB 2.0. However, the QuickSilver proved to be the exception to that rule in our tests. Neither interface can support speeds greater than about 33MBps in practice, so when they are connected to any hard drive fast enough to be bottlenecked by USB 2.0 or FireWire, there's really no difference between them in a practical sense.

Kanguru includes a soft, black carrying case with a zipper, as well as an OEM version of NTI Backup Now! 4.0.22.2. The latter runs under Win98 (but effectively Win98SE, as that's the earliest operating system that supports the drive) and WinMe/2000/XP/Vista. The drive is compatible with Mac OS 8.6 and later.

Toshiba USB 2.0 Portable External Hard Drive 200GB

\$179.99 • www.toshibastorage.com

This drive has an understated, no-nonsense presence. It's dressed all in matte black. If you've ever lost control over a presentation because your clients were more interested in your flashy computer equipment, this may be the portable drive for you.

Ventilated polymer bumpers enshroud both ends of the Toshiba's textured metal shell. These provide extra protection from bumps and knocks, but they also add a little width and



length to the unit's overall dimensions. So does the gorgeous blue activity LED, which stands proud in a ramped, chromed setting.

Toshiba sells various versions of this drive. The series starts with a 100GB (\$99.99) model, but there also are 120GB (\$119.99) and 160GB (\$149.99) devices in the lineup.

The company takes a different tack than Iomega or Kanguru in that it supplies two separate USB cables instead of a combo cable. The first is a typical USB data cable. The second draws additional power from a second USB port and terminates in a standard 5V power plug.

Toshiba recommends this drive for Win2000/XP/Vista and Mac OS X 10.3.9 and later. There's an included CD with NTI Shadow 3 for Windows and the Mac, plus a 30-day trial of NTI Ripper.

Western Digital Passport Portable 250GB

\$199 • www.westerndigital.com

This beautiful drive straddles the line between subtle and hip design. Curves here, angles there, and it's done up in gloss and matte black. (Yeah, you'll see fingerprints on it. But it's so pretty, you may not care.)

Rubber feet do a surprisingly good job of keeping the Passport Portable solidly planted on a clean desk. It's slightly lighter in weight than the other drives we reviewed because its solid-feeling enclosure is made of plastic, not metal. There's a pop-out rubber section on one end that hides the USB port.

There's no provision for auxiliary power for this bus-powered drive, and the 11-inch cable seems short compared to the others. Still, WD throws in

an awesome, padded carrying case with a rubber zipper pull tab. There's even an outer pocket on this useful black accessory.

Of course, it's a Western Digital drive on the inside, specifically a 5,400rpm WD2500BEV with an 8MB cache. On the drive is WD Sync, which as you may surmise is Western Digital's file synchronization program. There's some other stuff like Google Toolbar for Internet Explorer, Google Desktop Search, Picasa, and Acrobat Reader. All of these are already available free online, but they're somehow more enticing when you don't have to spend time downloading them.



The Passport Portable is backed by 30 days free phone technical support and a long three-year warranty.

Portable Powwow

All of these drives performed about the same, as they're all based on recent notebook drives and they all stuff data

through an overtaxed USB 2.0 and/or FireWire data cable. Think of our "Portable Hard Drives" benchmark results chart as nice, supplementary information, but don't base your purchasing decision entirely on performance.

Kanguru's QuickSilver seems to have an edge in backup writes, as long as you use its USB 2.0 connection. Most portable hard drives spend the majority of their time as backup devices, so this point is worthy of mention. More general usage seems to favor Western Digital's Passport Portable on paper, but again, none of these drives will really "feel" any slower than the others as you use it. These two drives also had the longest warranty, which means quite a bit when you're talking about mobile gadgets.

by Marty Sems

Portable Hard Drives

All drives were tested as is, meaning with preformatted file systems and/or with write caching disabled for quick removal capability.

	Iomega eGo 160GB	Kanguru 2.5" Combo QuickSilver 40GB	Toshiba USB 2.0 Portable External Hard Drive 200GB	Western Digital Passport Portable 250GB
Price	\$132.95	\$84.95	\$179.99	\$199
Size (inches, HxWxD)	5.25 x 3.5 x 0.75	5.2 x 3.1 x 0.6	5.6 x 3.75 x 0.9	5 x 3 x 0.75
Weight (ounces)	7.7	7.7	8.5	5.6
Interfaces	USB 2.0	USB 2.0, FireWire 400**	USB 2.0	USB 2.0
Warranty (years)	1	3 (drive), 1 (enclosure)	1	3
Futuremark PCMark05				
Overall Score (points)	2883	2459 [2357]	2784	3136
General Usage (MBps)	3.8	3.5 [3.6]	3.7	4.4
File Write (MBps)	29.3	29.1 [20.9]	30.6	29.6
1GB Folder Write (minutes:seconds)	2:16	2:04 [2:15]	2:20	2:41
Simpli Software HD Tach RW				
Read rates, average/maximum (MBps)	29.8/31	26/30 [26.4/31]	26.8/31	32.6/33
Random access time* (ms)	16.7	17.4 [17.2]	19.2	17.3

* LOWER IS BETTER.

** FIREWIRE TEST RESULTS IN BRACKETS [].

The iPod Isn't The Only Game In Town

Competitors Offer Worthy Alternatives

Considering that Apple recently sold its 3 billionth iTunes track and there are seemingly more iPods than you can shake a drumstick at, it's not always apparent that Apple isn't the only company in town making MP3 players. The truth is that plenty of companies offer alternatives in all shapes and sizes that don't have a lower-cased "i" attached to their names. Further, although we can't deny the brilliance that is the iPod's Click Wheel or the simplicity of transferring songs via iTunes, we can testify that other manufacturers are pouring innovative and unique touches into their players that are worth considering. The following is a look at several iPod alternatives ranging in storage, functionality, and intended audiences.

Archos 30GB 404 Camcorder

\$299.99 • www.archos.com

Archos was an early player in the portable media player game, and its experience shows in its considerable stable of devices. The 404 Camcorder tops out at 30GB, which is still enough to store 15,000 songs (MP3/WMA/WAV; AAC/AC3 with plug-ins), 300,000 photos, or 40 hours of video (MPEG-4/WMV; H.264/MPEG-2 with plug-ins), viewable on its 3.5-inch LCD (320 x 240). You also get a PDF viewer and voice recorder. Unfortunately, the 404 Camcorder's menu and navigational systems aren't as intuitive as we'd like. Shooting video (640 x 480 maximum) or taking photos (1.3MP top resolution), for example, isn't one-button easy, and folder organization could be clearer. In other words, keep the users guide handy, at least initially.

Positively, the 404 Camcorder can accept photo transfers directly from a digicam, offers plenty of configuration settings, and is thin enough at 3.09 x 3 x 0.59 inches (HxWxD) to slip into a coat pocket. Further, with Archos' optional DVR Station (\$99.99), you can record TV content in the MPEG-4 format, connect the 404 Camcorder to a home-theater system, charge the player, and more via Audio In/Out, composite video In/Out, S-Video In/Out, SPDIF, and RGB or YPbPr video out connections. Archos bundles headphones, a USB 2.0 cable, a DVR station adapter, and a carrying case.

With some time getting to know the 404 Camcorder and the optional DVR Station in hand, there are plenty of multimedia options here to keep you busy.

Creative Zen Stone

\$39.99 • www.creative.com

If you're looking to pack light but still have enough music to keep you company while exercising, your choices don't get much tinier than the Zen Stone. Literally matchbook-sized and nearly as light (0.7 ounces), the Stone still manages to hold 500 WMAs ripped at 64Kbps, as well as offer very strong volume levels. What you don't get is an LCD for viewing playlists and other information. Still, if you're only looking for a musical companion and have no need for photo and video capabilities, the Stone is dead simple to operate and serves its intended purpose well.

Loading tracks is drag-and-drop easy from Windows Explorer, where the Stone shows up as a removable storage drive, and navigating playlists is about as easy as any MP3 player gets. Transfers were somewhat slow on our WinXP test system, however. Adorning the Stone's front is just one Play/Pause button and an inconspicuous four-way jog dial surrounding it to move forward and back through songs and control the volume. At the top of the device is a tiny lever for shuffle, repeat all, and skip folder functions, and at the bottom is a miniUSB

port for connecting the Stone to a notebook or computer. Creative bundles a USB cable, but it's extremely short. You also get earphones and your choice of six colors, and a lanyard, AC adapter, clip, armband, and nifty keychain are available as accessory purchases. For users who require more storage space, Creative is now also selling a 2GB Stone Plus (\$69.99) model with an LCD, a stopwatch, and a voice recorder.

Samsung 2GB T9

\$129.99 • www.samsung.com

Elegant, stylish, and packing an impressive number of audio configuration options, Samsung's T9 has been a regular in our MP3 player rotation for months. The T9, which strongly resembles one of Samsung's cell phones, features a sharp 1.8-inch LCD, light weight (about 1.7 ounces), rounded edges, and a striking black or purple body (about 0.4-inches thin), which is smaller than Apple's iPod nano. A four-way jog dial and select button on the front move you through the T9's exceptional icon-based menu, which includes a File Browser, Text Reader, FM tuner, voice recorder, digital clock, several visualization options, Street Mode for stronger volume, nine-band equalizer, and DNSe (Digital Natural Sound Engine)-simulated 3D audio with 11 audio presets (Ballad, Rock, Classical, Jazz, etc.).

Conversely, Samsung's Media Studio 5 music-manager software doesn't make

Let The Music Do The Talking

Making straight-up comparisons of the MP3 players we looked at isn't exactly a fair process, as these players vary greatly in their intended audiences, storage amounts, and even the applications for which they are primarily intended. Still, the following chart should give you an idea of how these players size up according to your own expectations.



	Archos 30GB 404 Camcorder	Creative Zen Stone	2GB SanDisk Sansa Express	
Price	\$299.99	\$39.99	\$79.99	
URL	www.archos.com	www.creative.com	www.sandisk.com	
Storage	Up to 300,000 photos, 15,000 songs, or 40 movies	Up to 500 songs	Up to 1,000 songs	
Best Suited For	Multimedia nuts who want to record and watch video, movies, and photos, plus listen to music	Exercisers who don't need lots of frills	Music listeners who want to pack light but add on storage later	
Defining Features	Accepts photos straight from digicam; optional DVR Station to record TV; PDF Reader; 640 x 480 video captures	Incredibly small and lightweight; no screen; great volume; intuitive	No cable needed to transfer music; built-in microSD slot; 4-line LCD	
Power	Internal Li-Ion polymer; eight hours music playback; five hours video playback	Rechargeable Li-Ion polymer; 10 hours playback audio	Rechargeable Li-Ion battery; 15 hours playback	

transferring music from your library to the player as easy as possible; the embedded processor moves slowly through functions. Also, you must use a proprietary cable to connect the T9 to your computer, meaning that using a common miniUSB cable is out of the question. Better news is the T9's 30 hours of rated power from the Li-poly battery and the excellent audio quality. Samsung gives you earphones, a Line-In cable to connect the T9 to external speakers or a home-theater audio system, carrying case, and armband. A 4GB T9 runs \$199.95 and stores up to 1,000 songs or 25,000 photos.

SanDisk 2GB Sansa Express

\$79.99 • www.sandisk.com

One of our all-time favorite MP3 players is Creative's MuVo TX FM, due to its ultra-convenient, integrated USB

adapter. Remove the TX's protective case, stick the adapter into a PC's USB port, and presto—you're transferring tracks without a cable. SanDisk brilliantly takes the concept a step further with its Sansa Express, giving you the same integrated adapter plus a built-in microSD slot to add more storage. Although we're not crazy about the easy-to-lose lid that guards the Express' adapter (a keychain would have been better), the Express is an excellent all-around player even without the microSD slot for those seeking a player without photo/video tools—particularly considering its friendly \$79.99 price. (A 1GB Express is also available for \$59.99).

That the Express strongly resembles a flash memory drive isn't surprising considering SanDisk's memory lineage. Drag-and-drops will transfer your tracks to the Express from Windows Explorer, and the

process happens quickly. Furthermore, the Express' four-line, bright LCD is backlit in neon blue. A four-way jog dial and center button handles navigation nicely, and the menu system is about as straightforward as it gets. The Express' volume level isn't as strong as the Stone's, but you do get an FM tuner with recording, a voice recorder, a custom equalizer, a folder designated for Audible ebook downloads, and MP3/WMA/WAV/Audible format support. SanDisk also bundles earphones, a lanyard, and a USB cable in case your PC doesn't have a front-panel USB port.

SanDisk Sansa 4GB e260R Rhapsody

\$179.99 • www.sandisk.com

The Sansa e260R Rhapsody is part of SanDisk's Rhapsody series of flash-based



**SanDisk Sansa 4GB
e260R Rhapsody**

Samsung 2GB T9

**Toshiba Gigabeat
(U-Series)**

\$179.99

\$129.99

\$99.99

www.sandisk.com

www.samsung.com

www.gigabeat.com

Up to 1,000 128Kbps
MP3s; 64 hours listening

About 500 songs

480 WMAs (128Kbps)

Rhapsody music sub-
scription users who also
want video and photo
playback

Music listeners who
want lots of customiza-
tion, plus Text and File
readers

Music listeners who
want an affordable,
friendly-priced player
with good audio options

Excellent navigation; pre-
loaded with Rhapsody
songs and Channels;
microSD slot; extremely
durable

Good navigation; built-in
voice recorder; record-
able FM; very good audio
and video quality

Can rip tracks from
other devices via Line-In
ability; FM tuner; voice
recording with external
mic

Rechargeable Li-Ion; 20
hours playback

Rechargeable Li-polymer;
30 hours audio; five to
six hours video

Rechargeable Li-Ion; 20
hours rated

players, which also includes the 8GB e280R (\$249.99), 6GB e270R (\$219.99), and 2GB e250R (\$139.99). All are optimized for Best Buy's Digital Music Store, which Rhapsody powers, giving you a full 60 days of free downloads (or 1,000 plays) from Rhapsody's To Go subscription service, along with photo and video playback. SanDisk preloads the e260R with dozens of songs and Rhapsody channels, which automatically refresh with new tracks based on your usage patterns. Unfortunately, after 60 days, keeping your songs requires a \$14.99-a-month subscription fee.

Beyond the Rhapsody tie-in, the e260R remains an excellent, durable (the back is scratch-resistant) player similar in style and approach to the iPod, down to its Click Wheel-like navigation system and iTunes-like

jukebox/media manager. Further, the turn-based menu system is as visually intuitive as you'll see, and there's an integrated microSD card slot for more storage. Our player's 1.8-inch screen was a bit fuzzy, but it's bright and offers landscape and portrait views. In addition to photos and video playback, there's a voice recorder, several configuration options (thumbnails, multiple slideshow choices, customized equalizer, etc.), an FM tuner with recording, and more within the jet-black frame. SanDisk bundles a travel pouch, lanyard, earphones, and USB cable, and the rechargeable battery is user-replaceable. For a midrange multimedia player that grants easy access to millions of Rhapsody songs, this SanDisk device is a beauty. Like the T9, however, it uses a proprietary cable to connect to a computer.

Toshiba 2GB Gigabeat U-Series

\$99.99 • www.gigabeat.com

In terms of functionality, Toshiba's new 2GB Gigabeat U-Series player falls somewhere between SanDisk's Express and Samsung's T9. This is Toshiba's first flash-based MP3 player (previously released a hard drive-based S series player), and although it lacks video playback (the 1.1-inch OLED screen provides just 96 x 96 support), you can view JPEGs. Additionally, you get an FM tuner (10 presets) with recording; six equalizer settings, including a five-band user option; Line-In recording from other devices (albeit without monitoring ability); stopwatch Timer function; and a headphone jack that also doubles as an input for external microphones.

Available in black or silver, the Gigabeat is smaller (3 x 1.4 inches; HxW) but thicker (0.4 inches) than a nano. Additionally, it's feather-light, and its cross-shaped PlusPad navigation system and exceptionally intuitive menu system are a cinch to pick up. Conversely, Toshiba only bundles a USB cable, a CD containing Windows Media Player 11 (you need WMP10 or 11 to transfer songs), and earphones. Playback includes MP3, WMA (lossless included), and WAV files, and quality is good across nearly all levels. You can also use the Gigabeat to store data files.

Call Your Shot

If your sole purpose in an MP3 player is listening to music while exercising, the Zen Stone is an incredibly affordable option. If you require more functionality, SanDisk's Sansa offers expanded storage, and Toshiba's Gigabeat gives you photo playback, good audio quality, and intuitive navigational and menu systems. The T9 and e260R Rhapsody are exceptional midrange, flash-based players that add in photo and video tasks. Archos' 404 Camcorder covers all the music and video bases, although it's a bit more difficult to use initially.

by Blaine Flamig

Answer To Your Connectivity Prayers?

The Ups & Downs Of Mobile Broadband

An Internet connection is a mobile user's lifeblood. Without it, there's no way to grab your email in Microsoft Outlook, browse to a news site, or keep tabs on a business project at BasecampHQ.com and post photos to Flickr. In many locations, the solution is a Wi-Fi hotspot—a high-speed wireless connection available at coffee shops, book stores, airports, and hotel lobbies. When your work depends on the Web, it is frustrating when a Wi-Fi connection is either running slow (because of too many users), is down for maintenance, requires a fee (such as at Starbucks or Barnes & Noble), or is just not available at all.

The solution is mobile broadband, which helps you connect your laptop to the Internet over a cellular high-speed network. There are two options available: an add-on PC Card for your laptop or built-in mobile broadband, available on models such as the HP 6515B and the Dell Latitude D630. The “connect anywhere” aspect of mobile broadband works well for business travelers in urban locations and the suburbs of major cities, especially if they tend to avoid the stereotypical mobile user hang-outs (such as coffee shops, bus terminals, airports, and book stores) and want to connect from an old-fashioned restaurant or a city park that does not offer Wi-Fi.

Mobile Broadband Benefits & Stumbling Blocks

With mobile broadband, the main benefit is the ubiquitous signal. (Although said ubiquity is limited to metro areas.) Instead of hunting around for a hotspot, you can open up your laptop and connect quickly from anywhere you



Sprint offers the Merlin S720 card for connecting over the EVDO Rev A network.

happen to be—even in the car. Mobile broadband (which is also called WWAN, or wireless wide-area network) works well in downtown areas and the suburbs of most major cities. It's also not as subject to interference as Wi-Fi, which has to compete with other wireless devices, such as baby monitors and portable phones. Wi-Fi is more secure because the signal is encrypted and you can configure your own VPN and passcodes, but mobile broadband does use a technique that changes the frequency slightly every few seconds to make it difficult for hackers to intercept the signal.

One of the downsides to mobile broadband is that the connection speed may sometimes be unreliable. It can

change depending on where you are connecting, whether other mobile broadband users are gobbling up the connection, and whether you are indoors. While the advertised rate might be as high as 1Mbps (or 20X faster than dial-up), a more typical connection speed is about 300Kbps (or 6X faster than dial-up). In some ways, it's the ability to connect at all and check email or search the Web that makes mobile broadband worth considering, but it does not work well for downloading large movie files or making a backup to a Web storage site.

It's also important to understand all of the connection standards for mobile broadband. EVDO (Evolution Data Optimized) currently runs at around 400Kbps in real-world conditions. Recent mobile broadband adapters use Revision A, a new standard that uses software to tweak upload and download speeds. UMTS (Universal Mobile Telecommunications System) is slightly slower than EVDO but perhaps more reliable because it uses a technology similar to standard cellular networks that have been around for years and is the connection method that AT&T cards use. One major advantage to a UMTS card is that it can use EDGE (Enhanced Data for GSM Evolution), which is a slower cellular network that is widely available—even in rural areas.

We gathered a few mobile broadband cards from major providers in the U.S. to see how they held up in real-world tests. Generally, we found that mobile broadband is a good option for busy mobile workers or anyone who wants to connect from anywhere without constantly searching for a Wi-Fi hotspot. The connection may not be as fast or se-



The Verizon V740 is a compact ExpressCard device that snaps into a laptop slot.

cure as a wireless feed, but the luxury of an easy connection is a major plus. (NOTE: Prices for mobile broadband cards do not include the service contract, which typically runs about \$60 per month for unlimited data use.)

Sprint Merlin S720

\$249.99 or \$99.99 with two-year contract
 • www.sprint.com

This mobile broadband card from Sprint fits into the PC Card slot on your laptop and connects over the EVDO Rev A network. In real-world tests, the connection maintained about a 400Kbps connection in a downtown area but would sometimes drop as low as 150Kbps. Upload speeds hovered around 300Kbps—pretty good for a mobile broadband card and better than some DSL connections. A small flip-up antenna didn't seem to affect the speed whether it was up or down but did let us connect from a more remote area that was still within the coverage area for EVDO. Sprint claims that the S720 should connect as fast as 800Kbps or more. EVDO is available in 220 cities across the U.S., such as New York and Minneapolis, where we tested.

The Sprint connection manager software is streamlined for easy operation: You just click a large Go button to connect. However, we would have preferred more obvious controls that clearly showed signal strength or other connection variables (such as throughput rate). Although there is a Vista version for the Sprint connection manager software, we found that it would crash an HP 6515 notebook almost every time

we used it, causing a Blue Screen Of Death. Also, the software would sometimes fail to identify the S720 after insertion into our text notebook's PC Card slot.

Verizon Wireless V740 EVDO ExpressCard

\$129 with two-year contract •
www.verizonwireless.com

The Verizon V740 card has all the same advantages as the Sprint S720 card (such as good speeds and wide coverage in 220 markets) but is available in the smaller ExpressCard size, enabling compatibility with slim new laptops from companies such as Lenovo and Apple. Verizon offers a PC Card adapter, so you can use the V740 with a laptop that does not have an ExpressCard slot. Connection speeds were predictably the same as the Sprint card, running at around 400Kbps for downloads and 300Kbps for uploads. However, the ExpressCard was not able to connect on the outskirts of an EVDO network, probably because the small antenna is not as adjustable as the full-sized, rotating antenna found on the previous-generation Kyocera KPC650, which swivels easily for a better signal.

The Verizon VZAccess utility for establishing a connection is a more powerful program than its Sprint S740 counterpart. It will actually find and control an internal wireless connection on your laptop. Whether that is a good thing is a matter of taste; you might prefer to have Windows XP or Windows Vista control the connection or

NEWSBRIEF

Microreview: Centon OmniOffice

Think of the OmniOffice (\$33.50; www.centon.com) as a 2GB or 4GB DataStick Pro USB flash memory drive that happens to come preloaded with free office and productivity software. A toolbar gives you centralized access to the OpenOffice.org 2.0 office suite, which provides word processing, spreadsheet manipulation, presentation, and other applications. You can create and save files in formats that are compatible with standard office suites such as Microsoft Office. There's also ClamAV antivirus and portable versions of the Sunbird calendar/task list application and Thunderbird email client. The toolbar even allows you to switch among three virtual desktops, so you can have several applications open simultaneously without screen clutter. The OmniOffice runs all the apps from the USB drive, so there's nothing to install on a host PC. Our drive had 1.6GB unused space left on it for personal data, part of which we could store in a passworded "InfoSafe." The drive comes with a two-year warranty.

by Marty Sems



NEWSBRIEF

Microreview: Kingston MobileLite USB 2.0 9-in-1 Reader

The MobileLite from Kingston (\$11; www.kingston.com) may look like a chunky USB flash memory drive, but it harbors a secret. Two secrets, in fact. Both its upper and lower panels pop open to reveal reader/writer slots for several popular flash memory cards in small form factors. It supports SD (2.00), SDHC, mini SD, and micro SD, as well as MMC (4.1), MMCmobile, MMCplus, RS-MMC, and MMCmicro cards. Insert a card, then plug the MobileLite (model FCR-ML) into a computer's USB port. An activity light will tell you when the PC is accessing the card. Memory cards of this size are tricky to handle, so Kingston Technology gave the MobileLite special eject mechanisms. To remove an inserted memory card, use your thumb or fingernail to move a clear plastic slider. Your card should pop out in your hand, making the MobileLite ready for another. The MobileLite works with Windows 2000 SP3/XP SP1/ Vista, Mac OS 10.x, and Linux 2.4 and above. It has a two-year warranty.

by Marty Sems



The AT&T AirCard 875 runs fast but does not have an adjustable antenna.

use the wireless connection utility that comes with your laptop. The VZAccess software streamlines the process of connecting via Wi-Fi or WWAN from a single interface.

AT&T 3G LaptopConnect Sierra Wireless AirCard 875

\$349.99 or \$149.99 with two-year contract • www.wireless.att.com

The main competitor to Verizon and Sprint, in terms of the mobile broadband product itself and the connection method, is the 3G LaptopConnect Sierra Wireless AirCard 875 from AT&T (formerly Cingular). Using the UMTS network, the AirCard 875 connected at slightly faster speeds in a downtown area (about 450Kbps) and maintained the connection consistently. AT&T claims the reliable connection is due to how UMTS works well with the existing GSM network and because of the algorithms they use to manage bandwidth. However, EVDO is technically capable of much faster speeds of 800Kbps if you are in an outdoor location and there are few cellular users nearby.

The AirCard 875 uses a large attached antenna permanently hinged onto the card. It cannot be adjusted or moved, but we found it helped us con-

nect even on the fringes of the UMTS network. We did prefer the moveable antenna on the Verizon and Sprint cards because we could turn it slightly to get a better signal. Still, with the AT&T card inserted, we could move the laptop itself, presumably pointing the card toward a cellular tower, to get the best throughput. (It could also have something to do with the metal inside the laptop or interference in the room.) Upload speed was much less than the EVDO cards we tested, achieving only about 100Kbps.

HP 6515B Notebook

Starts at \$579 • www.hp.com

If you are in the market for a new notebook, the HP 6515B is a good choice because it ships with a mobile broadband capability built-in. The antenna and chip for the WWAN connection are actually contained within the notebook, so



HP offers mobile broadband as a built-in feature on the 6515B notebook.

there are no cards to connect or extra drivers to install. The HP notebook does an excellent job of managing the Wi-Fi and WWAN connection using one button just above the keyboard. Press it once to enable the wireless signal and again to turn it off (and save battery life). Connection speeds matched the Verizon V740 ExpressCard at about 400Kbps in a typical urban locale. In fact, the VZAccess software is included with the HP notebook, and it's identical to the software that comes with the Verizon V740 card.

by John Brandon



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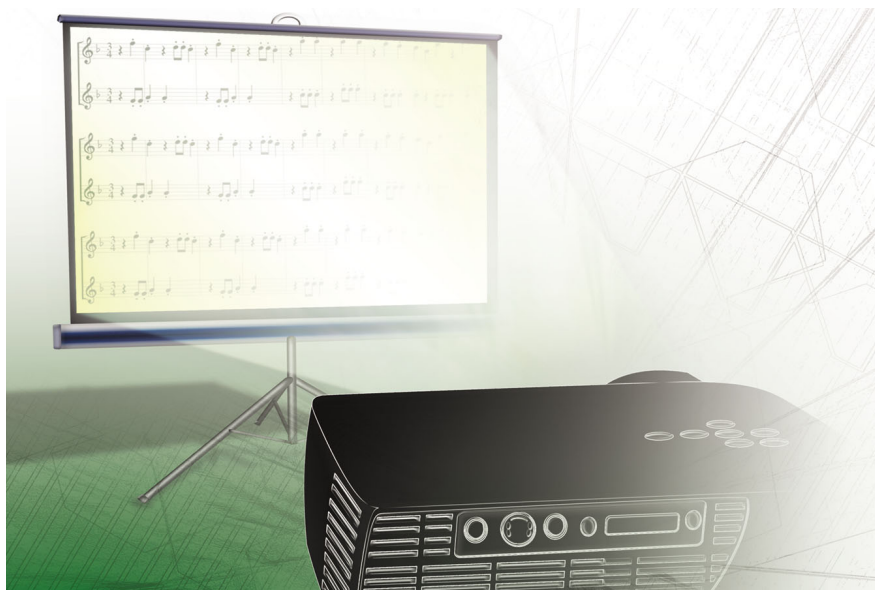
High-Def & Mobile Projectors

Make Your Presentations Sing

Typical business slides consist of nothing more than PowerPoint running ad nauseam. PowerPoint 2007 is certainly a powerful tool for sales meetings and business functions, but it's just too easy to rely on the static templates. And, over the past two decades, meeting attendees have certainly seen that black stick figure enough times, or a pie chart or some other graphic, and they are tuning them out and ignoring the message.

It's time to say goodbye to such stale, lifeless presentations and add some visual appeal. HD (high-definition) video is colorful, attention-grabbing, crisp, and much more interesting. For example, you can create an HD sales video with animations, video clips and charts, and business video segments. When you make a presentation, people will sit up and take notice of colorful and lifelike images and videos.

So what is required? For starters, you'll need a mobile projector that supports a component video connection. Component video is different from S-Video (a small black cable) or composite (the yellow, red, and white RCA connections). It is a red/green/blue connection that can carry a 480p, 720p, or 1080i signal. Those resolutions determine the quality of the video, and the numbers denote the amount of vertical lines displayed on the screen—and higher is better. The "i" stands for interlaced, and the "p" stands for progressive scan. An interlaced signal dates back to the early days of television, when every other line was removed to make the signal transmit easier. A progressive scan signal doubles the number of lines on the screen at a time. Note that the latest HD connection that supports 1080p video and audio,



called HDMI (High-Definition Multimedia Interface), is not supported on any currently available mobile projectors. Expect that to change by early 2008.

All these terms and definitions are important because not all mobile projectors are HD compatible, and some support an HD signal better than others. Check with the manufacturer to find out whether a mobile projector supports HD video at all and then determine the

resolution. Most newer projectors support at least 480p, which is the highest resolution for a progressive scan DVD. For 480p resolution, these DVDs require a component video connection. Connecting the HD source, such as an HD DVD player, to a projector usually requires an adapter that you plug into the DVI or VGA port on the projector. These adapters are usually not included with the projector but are available as accessories.

You will also require a component video cable (generally available at consumer electronics stores) that runs from the DVD player to the adapter.

You might wonder why you can't just play a high-def video on a laptop. There are two reasons. One is that even if you are



The hand-sized InFocus LP70 did not test out as well for high-def video as the other projectors we tested but is small and light enough for business use.



The Boxlight Broadview is a bit bigger than other mobile projectors but has some features that match the capability of a home theater projector—for a price.



The Mitsubishi XD90U has an excellent brightness rating of 1,500 lumens and contrast ratio of 2,000:1 that renders high-definition video beautifully.



Any high-definition source will work for transmitting HD video to a mobile projector, including this DISH Networks HD cable set-top box.

running your laptop at a high desktop resolution, such as 1,900 x 1,600, the video itself is actually played at standard resolution. A second reason is that most computers lack the video processing power to transmit true 1080i high-definition video.

Here's an example of how you can take your presentation from the creation phase to actual projection. Suppose you create a business video in high definition. You can burn a DVD with the video and then play it on a DVD player that supports progressive scan video. (Most of them do.) Connect the component video cable to the DVD player in the red/green/blue connection, connect the cable to the mobile project adapter, and then plug the adapter into the

projector. (Some projector models provide an entire component video cable that connects to both the DVD player and the projector itself, skipping the adapter.) When you play the DVD, the projector will automatically read the high-definition signal and you will notice a video signal quality increase.

We took a look at a few currently available HD projectors. All three models are sufficiently lightweight and could well provide a needed boost to any mobile professional's business presentations.

InFocus LP70+

\$1,249 • www.infocus.com

InFocus has developed a strong reputation as a manufacturer of mobile projectors for business users. As with most recent models, the LP70+ also supports high-definition content from a DVD player or cable set-top box. In tests, this unit worked fine in all the common HD resolutions, including 720p and up to 1080i, but the picture was

noticeably darker than the Boxlight Broadview. An 800:1 contrast ratio did not help make the video feed any more colorful because there is not as much tonal difference between shades of white and black and all the colors in between. Still, we preferred the button layout on the LP70+ and the remote, which allowed us to easily switch modes on the projector and locate the slightly raised power button even in a dark room. Similar to the Mitsubishi XD90U, the InFocus LP70+ is light and small enough—2.5 x 7.8 x 6.1 inches (HxWxD), and no heavier than the lightest laptops, at 2.4 pounds—that you can benefit from the HD signal (which uses a DVI-to-component adapter) even in your business travels.

Boxlight Broadview

\$1,895 • www.boxlight.com

Measuring 2.7 x 10.2 x 7.6 inches, the Boxlight Broadview is bigger than the other mobile projectors we tested but is still light enough at 4.4 pounds to take in a laptop satchel for the day. The maximum resolution is 1,600 x 1,200, so it can easily handle a high-def signal. Oddly, the DVI-I connection on the back of the unit is not a standard size, so if you want to connect it to a laptop, you'll need a DVI-I cable. For component video, Boxlight offers a component-to-DVI-I adapter that snaps onto the back of the unit so that you can connect your own component cable. In tests, the Boxlight Broadview was the brightest and clearest of the mobile projectors we tested, with an ANSI lumens rating of 2,600 (in boost mode) and a 2,000:1 contrast ratio, both of which help make HD video look sharp. The impressive specifications come at a price, though, as the Broadview was easily the most expensive unit of the three we looked at.

Mitsubishi XD90U XGA DLP Projector

\$1,400 • www.mitsubishi-presentations.com

About the same size as the InFocus LP70, and with similar specifications, the Mitsubishi XD90U XGA DLP Projector is a good choice for those who want to liven up a business presentation with HD video. This unit has a VGA port instead of a DVI port for connecting a component video cable. Also, it only uses a standard computer resolution of 1,024 x 768 but handled an HD signal of 1080i just fine. The 1,500 lumens rating is low compared to most home theatre projectors but was still bright enough for high-def business videos. The XD90U has a 2,000:1 contrast ratio that matches the more expensive Boxlight model, and video tended to look colorful and sharp as opposed to the washed-out look so common on lower-end projectors. It's also worth noting that, at a size measuring of 2.6 x 6.8 x 8.6 inches, the XD90U fits better in a small laptop bag and is easy to carry around.

by John Brandon

Pharos GPS Phone 600

Versatile Mobility

BOTTOM LINE

\$699.95 • www.pharosgps.com

The Pharos GPS Phone 600 features Ostia software for turn-by-turn GPS-based navigation. It comes with a higher price tag than you'll find on an ordinary smartphone but offers greater flexibility than the average smartphone provides.

Smartphones that can manage email, surf the Internet, organize your schedule, and place calls are common. If you look around the airport or other public places, you're likely to see a number of Treos, BlackBerrys, and various carrier-branded models. Earlier this year, another smartphone entered the ballgame: the Pharos GPS Phone 600. What sets this smartphone apart from the rest of the pack is its FM tuner, software, 2MP camera/camcorder, and integrated GPS (global positioning system) receiver with Ostia navigation software. The GPS Phone 600 also has integrated Bluetooth and Wi-Fi 802.11b/g along with voice command functionality.

The GPS Phone 600 runs on Windows Mobile 5.0 and comes with a 2GB microSD card with maps of the United States and Canada. Its applications include Wireless ISP, Microsoft Live Search, Spb Mobile Shell, Spb Full Screen Keyboard, EZDial, and a free trial of WorldMate Professional. The GPS Phone 600 also comes with a free three-month subscription to Smart Navigator that includes Real-time Traffic, POI Finder, Maps on Demand, and Follow Me services. The first time I used the GPS Phone 600, I had to install the software from the card. This is a one-time thing, but it does take a few minutes.

Pharos also makes a GPS Phone 600e that costs \$100 less and lacks the Pharos GPS navigation kit (including



the Ostia software, microSD card, car charger, car mount/holder, and Quick Reference Guide). James Oyang, Pharos president, says the benefit to users of the 600e is the flexibility to use this device for purposes other than traditional street navigation, such as campus tours and disaster assessment. "There are," he says, "other agricultural applications or utility company applications that need positioning capability but not the street guidance."

The FM tuner requires connecting the included headphones to the 2.5mm headphone jack. Reception quality varied indoors but worked well outside. Call quality on this unlocked, quad-band GSM (Global System for Mobile Communication) phone was good. The GPS Phone 600 supports up to five hours of talk time and 160 hours of standby time.

The Pharos GPS Phone 600 doesn't have rounded edges like those found on many of today's phones. Still, its boxy form is very comfortable to use, in part because the device is relatively thin at just 0.6 inches thick.

On the front of the device, you'll find hardware buttons to access the end call, begin call, navigation, and home functions. There are also two softkeys and a five-way navigation button on the front of the device. The left side of the phone has record and volume buttons. On the right side, you'll find the

power button and a dedicated camera button. The bottom of the device includes the microSD slot, USB charging port, and stylus holder.

There are always tradeoffs when you combine features usually found in multiple devices into a single device. The Pharos GPS Phone 600 has a higher price tag than you'll find on most smartphones (the BlackBerry 8800, for example, costs \$499.99 without a plan), but the Phone 600 provides additional features and flexibility as a result.

The good news is that Pharos is now able to extend a \$200 discount to T-Mobile customers, thereby reducing the price for the GPS Phone 600 to more competitive \$499. Those wishing to purchase the phone with a two-year voice and data contract from T-Mobile can receive this discount.

by Jennifer Johnson

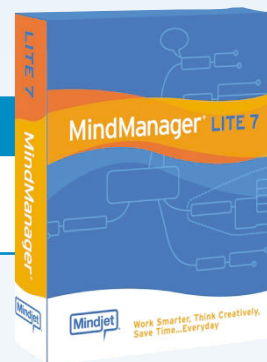
Mindjet MindManager Lite 7

Map Ideas & Workflows

BOTTOM LINE

\$99 • www.mindjet.com

Mindjet MindManager Lite 7 integrates well with Microsoft Office and is an ideal entry-level application for generating ideas and managing projects.



Many professionals must conceive ideas, workflows, and processes. And many professionals occasionally get stuck trying to do those things. I found Mindjet's (www.mindjet.com) products after hitting a wall while trying to create workflows for several of my consulting clients and feed my editor's hunger for new and better article ideas.

I also became familiar with mind mapping, a tool that let me present my ideas, concepts, and tasks visually based on a central keyword or idea. You can map out your meetings and workflows and use them as project management tools, or you can use the maps to define and illustrate a business process or generate ideas for a document you need to write for a client. In fact, the flexibility of Mindjet's MindManager Lite 7, and its big brother MindManager Pro 7, means you may find a use for mind maps that we can't cover in this review.

Experience Mind Mapping

MindManager Lite 7 is Mindjet's entry-level mind-mapping application. It includes the Microsoft Fluent UI, which maintains the same user-interface paradigm as the 2007 Microsoft Office system. MindManager Lite 7's integration with Microsoft Office 2003/2007 didn't strike me at first because I was still using Office 2003 on my PC. Mindjet's adherence to this new UI standard should make for a sharp learning curve for individuals already using the 2007 Microsoft Office system.

MindManager Lite 7 includes filters that let you hide or enhance specific areas of a map, giving you flexibility when mapping ideas, presentations, and other projects. This flexibility can come in very handy during decision-making and project management tasks.

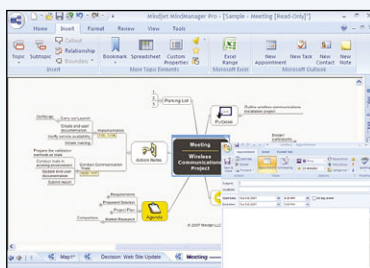
Other notable features that stood out as I used MindManager Lite 7 include the

Charts and Spreadsheets features that

enabled me to display key map data in a chart or spreadsheet. There is also an Outline view, which presents map data in an outline format. These features should be a strong selling point for many like me who have to present data to different audiences with various visualization styles.

The level of detail control is also very strong in MindManager Lite 7. I liked being able to insert callouts to any topic or relationship in the maps I created or presented. I find that focusing clients on interrelationships is also a typical need and the Summary Boundaries feature enabled me to group related topics within a visual boundary, which I frequently use to illustrate interrelationships and group ownership over topics.

If you are comfortable with Office applications, such as PowerPoint or Visio, you can pick up MindManager Lite 7 and start cranking out new maps. You don't have to be an artist to get maximum effect from a map. The program includes map templates, but you can visit Mindjet's online Map Gallery (www.mindjet.com/us/download/map_library) for additional template ideas you can download.



MindManager Lite 7 is the latest release of Mindjet's mind-mapping tool you can use to visually plan and create workflows and other work-related tasks.

Migrate To Mindjet MindManager Pro 7

If you've used Mindjet MindManager Lite 7 and could benefit from using and creating more maps, or if you require using Office Visio Export, PowerPoint Export, or a detailed Review mode, consider upgrading to MindManager Pro 7. The upgrade costs \$250 (available online at store.mindjet.com/store) and includes customizable views and bookmarks. The upgrade also gives you more granular control over map elements.

An Ideal Tool For Busy People

MindManager Lite 7 is an ideal entry-level solution for busy professionals seeking a tool to help breathe new life to their idea generation, decision-making, and project management tasks. And with its Microsoft Office integration and flexible views, MindManager Lite 7 does the job well.

by Will Kelly

Dmailer DmailerSync Plus

Synchronization Software With A Twist

BOTTOM LINE

DmailerSync Plus, \$39.95 • www.dmailer.com

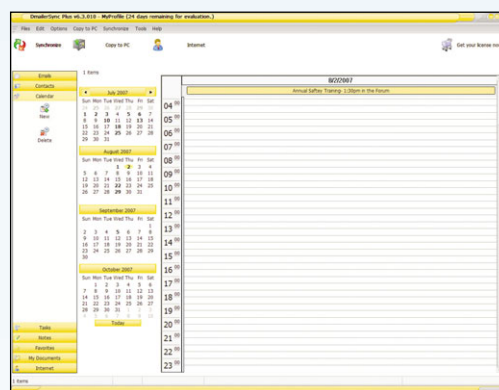
With DmailerSync Plus installed on your storage device, you may no longer need to travel with a laptop on business trips. The DmailerSync Plus email client lets you send and receive Outlook or Outlook Express email from any public PC, and the synchronization software encrypts the critical files on your storage device, so you can securely access the files on another computer.

Manually copying files from your PC to a storage device (USB flash drive, flash memory card, external hard drive, portable music player, etc.) is time-consuming, and if you don't pay careful attention, you may not transfer all the files you need. To help ensure that your storage device contains the most important, up-to-date files on your computer, DmailerSync Plus synchronizes the personal files, settings, and Microsoft Outlook data between your office computer and storage device. The software also features a Microsoft Outlook email client, so even if a host PC does not have Outlook or Outlook Express installed, you can send and receive email from your Outlook account.

After you install DmailerSync Plus on your storage device, a familiar wizard-like setup helps guide you through the file sync process. For example, you only need to click the appropriate checkboxes under the Email, File, Favorites, and Settings headings to choose the types of files and settings you want to synchronize. DmailerSync Plus creates a User Profile based on your choices; each time you

connect the storage device to your primary computer, the software synchronizes those file types on your computer and storage device. If you regularly use two computers, you can set up a second User Profile and use DmailerSync Plus to keep the files on both computers up-to-date. We like that you can set up DmailerSync Plus to automatically synchronize files whenever you connect the storage device to your primary computer. For example, if you delete or create an appointment in the Outlook Calendar on DmailerSync Plus, the software will automatically make those changes to the Outlook Calendar on your primary computer. If you prefer to double-check any changes before you overwrite a file, you can configure DmailerSync Plus to synchronize only when you press the Synchronize button.

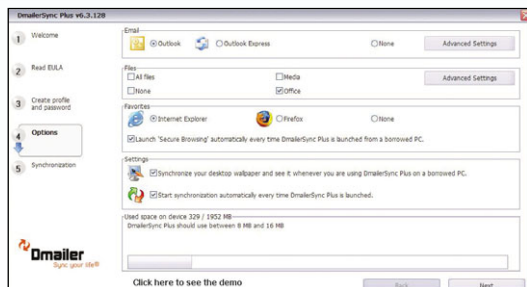
DmailerSync Plus encrypts data to your storage device with 128-bit AES password encryption, which is the government-supported standard for data encryption. To access data encrypted by DmailerSync Plus, you must run the DmailerSync Plus application, enter a password, and open the files through the program interface. We found the interface to be intuitive, as data is listed under obvious categories (Emails, Favorites, My Documents, etc.), and in a few clicks, we could locate any file we needed. For instance, when you click the Favorites button,



The quick-access buttons on the left-hand side of the DmailerSync Plus interface allow you to find your files in a few clicks.

DmailerSync Plus displays all the links in your Internet Explorer and Firefox bookmarks. The Favorites category also includes a Secure Browsing function that saves Internet data, such as cookies, cache, and history files, to your storage device rather than the host PC. Say you wanted to access your online bank account or sensitive online work data on a public PC, you could turn on the Secure Browsing option to make certain you don't leave any trace of sensitive information on a public PC.

DmailerSync Plus costs \$39.95 and is offered in both standard and U3 editions. The U3 edition requires a U3-enabled device but allows you to conveniently open DmailerSync Plus from the U3 Launchpad. The standard edition works on any storage device, but you have to find and double-click the DmailerSync Plus file on your storage device to open the program. DmailerSync Plus is compatible with Windows 2000/XP/Vista. **by Nathan Lake**



It's easy to select which files DmailerSync Plus syncs between your primary computer and storage device.

Allo.com

Use VoIP With Your Mobile Phone

BOTTOM LINE

Allo.com • Prices & Plans Vary • www.allo.com

Allo.com offers a wide range of Internet phone service plans to match your needs, and the MobileVOIP feature sets Allo.com apart from other VoIP providers. In our tests, the voice quality was consistently good.



Because long-distance calls on mobile phones can be expensive, many travelers use a VoIP (Voice over Internet Protocol) service to avoid running up long-distance charges on their mobile phones. But on the road, you can't guarantee access to an Internet connection, and it can be inconvenient to attach a VoIP-enabled handset or a microphone to your PC.

To better assist on-the-go VoIP users, the VoIP service provider Allo.com includes a MobileVOIP feature that lets you route calls from your mobile phone

through your Allo.com VoIP service. With Allo.com's MobileVOIP feature, you simply call your home or office VoIP number, and then the AlloATA (Analog Telephone Adapter) recognizes your number and prompts you to dial the outgoing number.

Available in both Residential and Business plans, customers can choose between a monthly or pay-as-you-go fee structure, and some plans include a free AlloATA. Residential customers can also sign up for two years of service for \$199, which comes out to only \$8.29 a month.

Every Allo.com VoIP plan includes MobileVOIP, voicemail, caller ID, a soft-phone client, ID spoofing, E-911 dialing, call conferencing, call waiting, and call forwarding features at no additional cost. A T38 Fax, which is a dedicated fax line for VoIP, is included with every Business plan and can be added to Residential plans for \$9.95 a month. To offer sound with less dropouts and more realistic voice quality, Allo.com runs on a private MPLS (Multiprotocol Label Switching) network, instead of a public IP network.

by Nathan Lake

FSP GROUP

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19V | 65W | 3.42A

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Samsung SE-T084L

A Slot-In Slim External DVD Writer

BOTTOM LINE

\$150 (street price estimated by Samsung) • www.samsung.com

Sturdy and steady for backup or entertainment on the road.

This slim, portable burner is unusual in that it's a slot-loading drive, yet still able to load 8cm (3.1-inch) mini CDs and DVDs. The lack of a tray means you can make the SE-T084L stronger with fewer parts that are vulnerable to breakage. It feels sturdy in the hands, as if it's built to last.

Samsung also gave the drive an eject button, sidestepping the design mistake some manufacturers make with their slotloaders. If you can't eject a disc by using the software for some reason, should you be in the habit of doing so, you'll still be able to eject it manually.

The SE-T084L is a LightScribe-capable burner compatible with all writeable DVDs (8X/8X/8X DVD+RW, 8X/6X/8X DVD-RW) and CDs (24X/24X/24X), including DVD-RAM (5X) and both types of 8.5GB dual-layer discs (6X DVD+R DL and 4X DVD-R DL).

You can run it without the included power adapter on most USB 2.0 ports, but we tested it with AC power using Verbatim media except as noted. Our SE-T084L came with Nero Essentials 7.5.9.1, but we tested with the latest version of Nero Ultra.

The SE-T084L is noisy during loading and when spinning discs at certain

speeds, but that's common in compact external burners. Note that it slowed down to a 2X write rate to burn 1.4GB mini DVD-Rs. Also, the drive didn't care for our Verbatim 3X DVD-RAM discs.

This ROHS-compliant Samsung was a decent performer for a USB, compact unit. It couldn't match the speed of a full-sized internal burner with an IDE or SATA interface, but it was almost as fast as most internal drives at writing a LightScribe 1.2 text label. It's a capable, portable, and attractive unit.

by Marty Sems



Logitech QuickCam Ultra Vision

Big Form Factor, Big-Time Photo Quality

BOTTOM LINE

\$129.99 • www.logitech.com

Sharp picture quality with an excellent software bundle.

If the QuickCam Ultra Vision isn't the best Web cam I've used, it's my favorite. Of the 12 or so cameras I've tested from Microsoft, Creative, Kodak, Logitech, and others, the Ultra Vision's excellent image quality, integration of video calling apps, and software bundle set it apart, despite a lofty \$129.99 price.

Sporting a 1.3MP sensor and f/1.6, five-element glass lens with 45-degree tilt, the camera supports true 1,280 x 960 images and up to 4MP interpolated shots. Logitech claims HD video support (960 x 720; fine quality but with noticeable lag), but "live" 30fps video happens at 640 x 480. The best features, though, are integrated RightLight 2 and RightSound

technologies. RightLight automatically enhances poor lighting, such as underneath my desk and in a desk drawer. RightLight adjusted these images beyond my expectations, albeit with some lag time and graininess. RightSound focuses on providing echo-free, clear audio via the built-in mic and was nearly as impressive in my tests.

Using the Ultra Vision is a no-brainer. A side panel-like interface holds seven icons but grants access to dozens of fun filters, face accessories, avatars, Privacy Shades, and software-controllable tilt/pan/zoom abilities, plus Face Tracking, brightness, contrast, color intensity, gain, exposure,

and white balance controls. You also receive access to Skype, Windows Live Messenger, Yahoo! Messenger, AIM, and Logitech's VideoCall. Testing with each app went smoothly.

Downsides include no Mac support, no carrying case, and the camera's heftiness (it looks and feels like a motorcycle handgrip). Conversely, shutter and video preview buttons are cleverly integrated, and the flexible rubber mounting bracket easily secured to my LCD and notebook displays. Available in silver and black, the Ultra Vision performs as sharply as it looks.

by Blaine Flamig



Xantrex XPower Powerpack Solar

Instant Power, Anywhere

BOTTOM LINE

\$170 • www.xantrex.com

The Xantrex XPower Powerpack Solar works as advertised, providing a hefty charge for multiple devices in a pinch, but it's bulky and the charge doesn't last long enough.

By combining a large battery with a solar panel, Xantrex's XPower Powerpack Solar can power your electronics wherever you go.

Weighing in at 12 pounds and about the size of a boom box, the XPower Powerpack Solar is anything but thin and light. That's because inside is a 10 amp-hour, sealed lead-acid battery and the electronics to power two 120V AC outlets, one 12V DC outlet, a 5V USB port, and a handy LED light. Capable of providing 320 watts of continuous power and peak loads of 600 watts, the device is great for creating an instant office anywhere.

In addition to showing the charge level, the control panel displays current power consumption. We used the XPower Powerpack Solar to run and charge a Lenovo ThinkPad T42 notebook with a live mobile Web connection for two hours. While adding a 15-inch LCD TV and a smartphone reduced the battery's output to one hour 25 minutes, connecting the removable solar panel adds 5 watts in bright sunshine and can extend its life by about 20 minutes. On the downside, the screen displayed a "Lo" charge level after 60 minutes, giving little information about how much time remained.



The device can charge itself in about 16 hours using the included AC charger or in about three hours using the included vehicle charger. Using only the solar panel, it takes nearly two days to charge the battery. While having the ability to power a bunch of mobile gear can be quite liberating, ultimately XPower Powerpack Solar is a tease that's too heavy and doesn't last long enough. But in a pinch, it's a powerful start.

by Brian Nadel

Logitech VX Nano Cordless Laser Mouse

Set The Mouse Free

BOTTOM LINE

\$69.99 • www.logitech.com

Its price tag may be a mousetrap for some, but the VX Nano has the smallest transmitter around, precise tracking, and exceptional feel and control.



One of the best mobile mice on the market, Logitech's VX Nano Cordless Laser Mouse should be in every traveler's notebook bag. At 3.4 ounces with a pair of AA batteries installed, the black VX Nano is lighter than many wired mice. It replaces the USB cable with a proprietary 2.4GHz wireless link and a transmitter for the notebook that's barely the size of a USB plug. In fact, it's so small that it would run the risk of being lost if there weren't a place inside the mouse to stash it when traveling.

For most, installing the VX Nano consists of plugging the transmitter into a free USB slot and giving the system 30 seconds to automatically install the software. Unlike some cordless mice, it works just as well plugged directly into a notebook as with a USB hub. It has right and left actuation buttons, forward and back switches, and a two-speed scroll wheel. Flick it to fly through long Web pages or roll it more slowly for precise control. The mouse also has an Internet search button that brings up your site of choice, but

you'll need to load Logitech's SetPoint 4.0 software for it to work.

After a week of daily use, the VX Nano had a range of over 15 feet and worked well on a variety of surfaces but, like other laser mice, not on glass. Logitech claims that its batteries will last for up to six months. With smooth action and precise tracking, the mouse doesn't lag and we really like the soft rubber grips for the thumb and pinky. At \$69.99, it's expensive, but it's as close to a perfect pointer as we've seen.

by Brian Nadel

CONSTRUCTION Zone

The Latest Hotel & Airport News

Hotel Construction News

Denver's downtown skyline.

Denver Gets Three Luxury Hotels

Downtown Denver will see an increase of nearly 600 hotel rooms in the next few years as three luxury hotels make their way to the area. A W Hotel is planned for the 16th Street Mall area. A Ritz-Carlton is opening in a former Embassy Suites location, and the Four Seasons will be located at 14th and Arapahoe Streets.

All of the hotels will include condo residences in addition to guest rooms. The W Hotel will offer 180 guest rooms and 56 condos; the Ritz-Carlton will have 202 guest rooms and 80 condos; and the largest development, the Four Seasons, will offer 230 rooms and 102 condos.

The three hotels will open at different times, with the Ritz-Carlton opening first by the end of the year, followed by the Four Seasons in 2009 and the W Hotel in 2010. According to the current schedule, only the Ritz-Carlton will be open prior to the 2008 Democratic National Convention to be held next August in Denver.

PHOTO COURTESY OF DENVER METRO CONVENTION & VISITORS BUREAU.

Watergate Hotel Closes For Remodeling

A Washington icon, The Watergate Hotel closed in August to undergo extensive renovations. The hotel is part of the six-building Watergate complex, which includes offices, residences, and a small retail center. It was at the Democratic National Convention Headquarters, in one of the office buildings in the complex, in which the Watergate burglary occurred in 1972 and ultimately led to the resignation of President Richard M. Nixon.

The 40-year-old hotel will be closed for 18 months during the remodel, which is estimated will cost approximately \$170 million. Upgrades to the 13-story hotel will make the guest rooms larger and add other luxury features. Located in the Foggy Bottom area of northwest Washington, the hotel is near the Kennedy Center for the Performing Arts, George Washington University, and the Potomac River.

Hilton Opening Hotel In Branson

The new Hilton Branson Convention Center hotel in Branson, Mo., is connected to the Branson Convention Center. It is within walking distance of the Branson Landing retail and entertainment area located on Lake Taneycomo. It also provides easy access to Branson's numerous music theatres, golf courses, lakes, and other attractions.

The 12-story hotel offers 293 guest rooms with amenities that include LCD flat-panel televisions, wired and wireless high-speed Internet access, and adapters for MP3 players. An onsite restaurant is open for breakfast, lunch, and dinner. Business services, fitness equipment, a pool, and a parking garage are other amenities available to guests staying at the Hilton Branson Convention Center hotel.



Music theatres draw tourists to Branson, Mo.

PHOTO COURTESY OF BRANSON UPDATE.

New Hotel Construction At Indianapolis International

Local developers are building three new hotels near the Indianapolis International Airport in the area near the Six Points Road interchange of I-70. The hotel brands and capacities include Embassy Suites with 150 rooms, a Hilton Garden Inn with 126 rooms, and a Hampton Inn and Suites with 119 rooms. Passenger traffic at the airport is expected to grow with the opening of a \$1 million terminal next year.





Airport Construction News

Improvements Planned For Denver Airport

Proposed upgrades to Denver International Airport include a commuter rail station linking the airport with Union Station in downtown Denver, an automated baggage system, and a new terminal for as many as 23 commuter airplanes. The improvements, which will cost \$1.2 billion, are slated for completion throughout the next seven years. The majority of the money for the project is being raised through the sale of bonds.

When Denver International opened in 1995, plans for an automated baggage system were scrapped because the original system proved problematic and subsequently delayed the airport's opening. At that time, officials decided to return to traditional baggage handling. Airport officials now plan to choose a proven automated system in use at other airports.

Additional upgrades include expanding Concourse C to accommodate 10 gates for commercial aircraft, adding cars to the automated train system, building an additional parking garage, and expanding shuttle parking. Great Lakes Aviation, Continental, and Southwest are expected to occupy a portion of the Concourse C enhancements, which will cost an estimated \$280 million. The parking garage is estimated at \$59 million, and the cost of the additional shuttle parking is projected at \$17.8 million.



New Gates Open At Savannah/Hilton Head Airport

A 54,000-square-foot terminal addition has added five new gates to the Savannah/Hilton Head International Airport. The new gates, occupied by Delta Air Lines and US Airways, increase the airport's total number of gates to 15. The new terminal also houses a new retail area called Hilton Head Isle. Shops and restaurants include Starbucks, Dewar's Clubhouse Bar and Grille, and Hilton Head Marketplace.

The airport serves more than 1 million people per year and has recently added daily flights to East Coast cities such as Boston, Philadelphia, and New York, with many passengers headed to the Hilton Head area. Work on the addition, which cost \$14.2 million, began in April 2006.

Scheduled for an October opening, another construction project will add a \$32 million four-story parking garage to the airport. The garage, which is being built over short-term parking, will include equipment that will direct drivers to empty spaces. When complete, the parking garage will bring the total number of parking spaces to 2,700.

The terminal and parking garage projects will help the airport prepare for additional air service anticipated over the next couple of years and for the arrival of larger regional jets, according to Patrick S. Graham, executive director of the airport.

American Airlines' JFK Terminal Nears Completion

Focusing on corporate and business customers, the new \$1.3 billion American Airlines terminal at JFK Airport is nearly finished. Passengers will experience numerous amenities, including more than 3,000 feet of curb space for curbside check-ins, passenger drop-off and pick-up, and self check-in; 2,500 linear feet of moving walkways; and expedited security for premium customers.

For dining and entertainment, the terminal features an Admirals Club and a Flagship Lounge. The venues offer wireless Internet, plasma-screen televisions, and food and beverage services. Passengers will also see additional gates, including 15 that can handle international flights. A total of 32 immigration positions and 10 customs positions can process as many as 1,600 passengers per hour. The customs and immigration area comprises 82,000 square feet in Concourse B.

The finished terminal has three primary levels, with four concourses and 55 gates. Passenger traffic is estimated to reach 14 million per year.

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JFK Airport

What's New At America's International Gateway

Recently beleaguered with more than its fair share of delays, JFK (code for John F. Kennedy International Airport) remains a busy airport on many counts. It's New York City's busiest airport, and it's the 15th busiest in the world in terms of passenger traffic, handling more than 43.7 million passengers in 2006. JFK is also, according to the U.S. Department of Transportation, the country's No. 1 gateway for international passengers entering the U.S.

Shop, Dine & Ride

Your best bets for shopping and dining within the airport reside in your arrival terminal.

You can get from one terminal to another via the AirTrain system, which connects to the city's subway systems at the Jamaica Station and Howard Beach Station stops. The catch, though, is that when you exit a terminal at JFK, you also exit security and must stand in another security line to enter a different terminal. Terminals 6 and 7 have the best sit-down dining options inside security.

Cell Phone Parking Lot

If someone is meeting you at the airport, she can now use the new Cell Phone Lot, located off of Van Wyck Expressway to the west of Federal Circle. If you're heading for

the Cell Phone Lot after landing, take the AirTrain to the Federal Circle stop, the same place you go to pick up a rental car or catch a hotel shuttle.

Power Poles

Also new to JFK are Power Poles. If any of your electronic devices are in need of a charge, you can take them to JFK's recently installed Power Poles. Each Power Pole stands 8.5 feet tall and offers four free electrical outlets. The poles are located in all JFK terminals.

Fly Clear

The Clear Registered Traveler program, which operates in conjunction with the Transportation Security Administration, costs \$99.95 per year and lets you breeze through security at a handful of airports, including JFK. With a Clear pass, you can now access the Clear lanes in JFK's Terminal 1, Terminal 4 (concourses A and B), and Terminal 7. Go to www.flyclear.com for details on the program and lane hours.

by Calvin Clinchard



JFK By The Numbers

29

JFK's ranking among airports worldwide for overall activity (passengers and cargo), right above Beijing Capital International Airport (30th) and just beneath Dulles International Airport (28th)

1948

The year the first commercial flight took off from JFK, originally named Idlewild and shortly thereafter renamed New York International Airport

1963

The year officials renamed the airport John F. Kennedy International Airport

4,930

The number of acres that JFK occupies

14,700

The approximate number of JFK's parking spaces

30.1 billion

The annual number of dollars the Port Authority claims that JFK generates in economic activity in the surrounding region

Airline Club Locations & Hours



American Airlines Admirals Club

www.aa.com/admiralsclub

- Terminal 8, Concourse B, above the ticket lobby
Open daily, 5:30 a.m. to 7 p.m.
- Terminal 9, Concourse B, just past the security checkpoint
Open daily, 5:30 a.m. to 11:30 p.m.
- Terminal 9, Concourse C, near Gate 42
Open daily, 5:30 a.m. to 11:45 p.m.



Delta Air Lines Crown Room Club

www.delta.com/crownroom

- Terminal 3, Gate 6
Open daily, 5:15 a.m. to 9:15 p.m.



United Airlines Red Carpet Club

www.united.com/redcarpetclub

- Terminal 7, above the ticket lobby
Open daily, 5 a.m. to 9 p.m.

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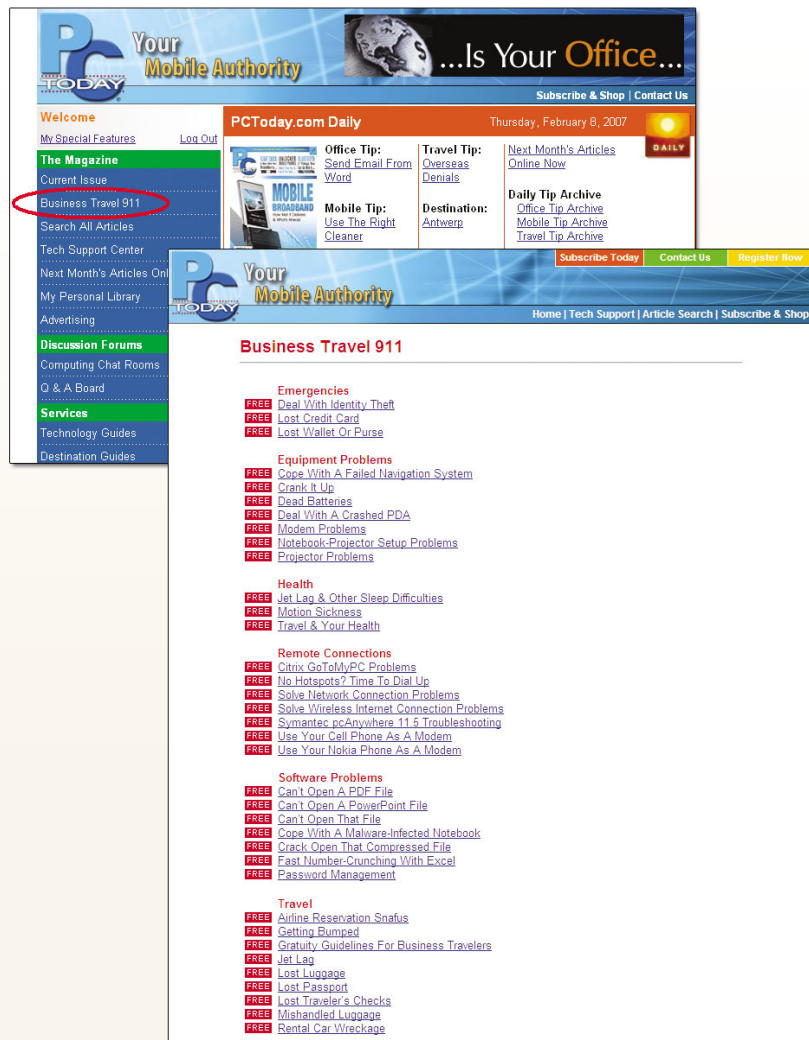
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Currency Converter, Airport & Airline Info & More

The Services menu on the left side of the PCToday.com home page offers links to additional travel resources. Here you'll find Web sites and phone numbers for airlines, U.S. and international airports, hotel chains, and vehicle rental agencies. There's also a Currency Converter for planning and expense reports. And the Destination Guides, U.S. Travel Resources, and International Travel Resources pages also provide valuable destination information.

Wi-Fi Hotspot Locator

Would you like to find the nearest Wi-Fi hotspot?

Enter your location on the right and click the Get Hotspots button. You can then narrow down your search by a specific location type or carrier.

Hotspot Locator

Address: Zip Code/Post Code:

State/Province: Country:

City: Distance Radius (Miles):

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Association of Business Travellers

Business travelers who make their own travel arrangements have gained a helpful ally in the Association of Business Travellers. This association offers discounts on a number of travel services, including lodging, car rental, and travel insurance. The association also will plan the trip, saving busy business travelers both time and money. Other benefits include a lost-luggage tracing service and toll-free phone and fax lines from major countries.

<http://www.abt-travel.com>

BootsnAll.com

Naming itself the Ultimate Resource For The Independent Traveler, BootsAll.com has what you need to make informed travel decisions. You can search for and book airline tickets, hotels, hostels, rental cars, and Eurail passes. You can also visit the Round The World Travel Guide to be guided, step-by-step, through planning your next trip. Ask an Insider to read reviews, visit the Discussion Boards for other people's opinions, and catch up on the latest Guides, Stories, and Travelogues.

<http://www.bootsnall.com>

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Solve Network Connection Problems



WIRELESS NETWORKS are almost anywhere you want to be. You can go to your local coffee shop, library, or pizzeria and get a high-quality signal so you're never out of touch. But what happens if you can't connect? It is a common, and frankly annoying, complication of an otherwise fantastic system. Below, we're going to cover a few of the more common problems and how to fix them. As an added bonus, not only will we provide answers for Windows XP users, but we'll also provide answers for Microsoft's newest OS, Windows Vista. **by David Miller**

View & Connect To Available Wireless Networks

The first step to getting online with a wireless network is to choose the appropriate network for your location. If you're using WinXP, you'll need to find a list of the wireless networks within range of your computer. To check, click Start, Control Panel, and Network Connections. Here you'll find a list of all of the possible connectivity options on your computer. Right-click the icon for your wireless network connection and click View Available Wireless Networks. This will take you to a list of all available networks and their respective signal strengths.

If you're using Windows Vista, the procedure is similar, but the names are different. Click Start, Control Panel, Network And Internet, and Manage Wireless Networks. This will bring up a list of available networks similar to the one described above for WinXP. Select the appropriate network and click Connect. With either Vista or WinXP,

you'll be able to preferentially connect to a given network by moving a network up or down on the preferred network list on the Wireless Network Connection Properties window.

If you're using a network provided in some public place, the network will most likely be named after the establishment providing it; if not, there will be information posted somewhere in the area stating the name of the network. You may also be required to provide a network security key or a passcode. These will be provided by the service provider or posted somewhere nearby. If all else fails, ask an employee for the appropriate information. One final tip: When trying to view all the Control Panel options in one screen, it might be easier for you to switch to Classic View rather than Category View from the upper left-hand corner of the window in either WinXP or Vista.

Network Name Not Broadcast

Sometimes, operators of a given network don't want just anyone to access their network. In that case, they might choose to set the network so that it doesn't broadcast the SSID (Service Set Identifier). In this case, the name of the network won't show up in the list of available networks in either WinXP or Vista. In order to connect to networks without a broadcast SSID, you'll first need to get the name of the network from an employee of the establishment providing the service. Once you have the network SSID information, security information, and passphrase, you're ready to proceed.

If you're using Vista, click Start, Connect To, and Set Up A Connection Or Network. This will bring up a dialog box to help you set up a new connection. Follow the steps provided, inputting the network SSID and other information from the service provider. This network will then be stored on your computer for future access so you won't have to re-input the information the next time you try to connect.

Again, the process is similar but called something different for WinXP users. To manually input connection information for a nonbroadcast network, navigate to Network Connections in the Control Panel as described previously. Right-clicking the Wireless Network Connection icon and selecting Properties will bring up a new window. On the Wireless Networks tab, click Add and input the SSID, security, and connection information for the network you're trying to access. As with the Vista connection, this new network information will be saved for future use. In both Vista and WinXP, this screen is helpful in determining how strong or weak your wireless network signal is. If you have a weak signal, try moving to another location in the room since a strong signal will increase the performance of the network connection.

Change TCP/IP Settings

If you're sure your network connection is good and you've got a strong signal, the problem might be more software-related. If you can connect to the network but not to the Internet, the culprit is likely a DNS (Domain Name Server) issue. The most commonly used setting for public networks (wireless or otherwise) is to automatically assign an IP

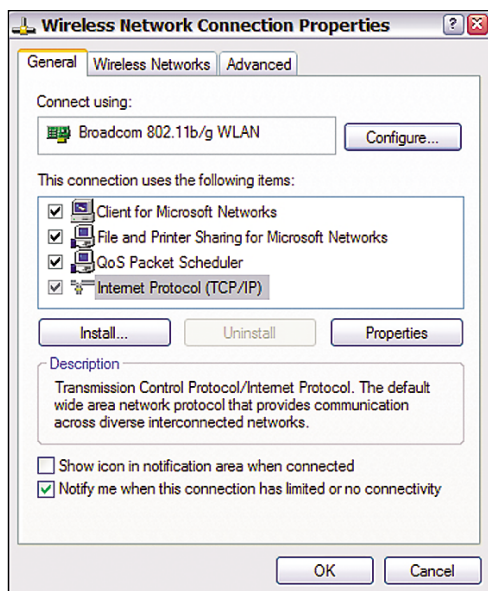
(Internet Protocol) address. Using the router's DHCP (Dynamic Host Configuration Protocol) will automatically assign an IP address when you connect to a wireless network. This means that you won't have to manually change your IP address, DNS, or WINS (Windows Internet Name Service) settings each time you connect to a new network.

Chances are, most freely available public networks use DHCP rather than having users manually assign an IP address.

For WinXP users, changing the TCP/IP settings is a simple procedure. Navigate to the Network Connections Properties window as described previously. On the General tab, select Internet Protocol (TCP/IP) and click the Properties button. If the network to which you're connecting has DHCP enabled, make sure that the buttons labeled Obtain An IP Address Automatically and Obtain DNS Server Address Automatically are selected. If you need to manually assign DNS and IP information, select the radio buttons labeled Use The Following IP Address and Use The Following DNS Server Addresses. Enter the IP Address, Subnet Mask, Default Gateway, Preferred

DNS Server, and Alternate DNS Server, each of which will be provided to you by the service provider. All the addresses are the same format: four groups of up to three digits, separated by periods.

The process for Vista users is similar but slightly more complex. Windows Vista has support for both TCP/IPv4 and TCP/IPv6. IPv4 (Internet Protocol version 4) is the fourth and currently used iteration of network layer protocol on the Internet. IPv6 is the successor to IPv4. Vista users have support for both protocols, which will help once v6 is widely deployed, but it also requires more setup procedures. After clicking Start, Control Panel, Network And Sharing Center, and Manage Network Connections, right-click the network icon that you want to change and select Properties. You will then have to change the settings for both TCP/IPv4 and TCP/IPv6 to ensure that the DHCP settings are used no matter the protocol. In both cases, select the option for automatic IP address and click OK. Finally, to change DNS information, clicking Obtain DNS Server Address Automatically will do just as it says. If you're an advanced user or your network requires it, you can manually assign IP and DNS settings with the above procedure, but it won't be necessary for most users.



To change the IP (Internet Protocol) or DNS (Domain Name System) settings for your network connection, select Internet Protocol (TCP/IP) and click Properties on the Wireless Network Connection Properties window.

Repair A Connection

Sometimes networks can just get congested, and a given user might experience lag when connecting to Web sites or even get disconnected entirely. If you've connected to a wireless network before and you know that your settings are correct, you might just

need Windows to fix your connection. In either WinXP or Vista, you can right-click the network icon in the System Tray (aka the Notification Area). If you're unsure which icon represents the network, just run your cursor slowly over the different

icons; a small text box will tell you what each icon does. Once you've found the right icon, select Diagnose And Repair in Vista or Repair if you're using WinXP. This will take you through several steps, such as disconnecting your wireless network card,

refreshing your DNS, and getting a new IP address, either of which can also help resolve certain DHCP issues. Many times, a repaired connection is all that's required to get a stronger connection or connect to an otherwise stubborn network.

Use A Windows Mobile Smartphone With Bluetooth As A Modem



Mobile Internet access is becoming more and more prevalent. For the frequent traveler, this means that you can use your smartphone to access your email, catch up on the latest news, and more, regardless of location. However, there are limits to what you can do on a handheld device, and staring at your phone's small

screen may strain your eyes. Alleviate these nuisances by using your smartphone as a high-speed modem for your laptop.

In order to use a Windows Mobile smartphone as a modem for your laptop, you'll need to connect the two devices. Wired and wireless connections are available, depending on the capabilities of your phone and laptop. For this article, we'll focus on establishing a connection via Bluetooth.

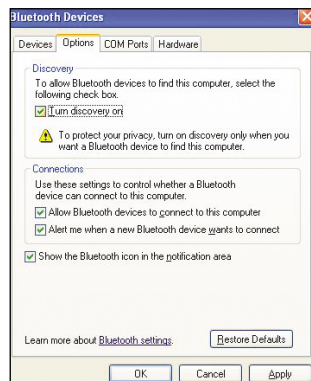
by Jennifer Johnson

Pair Your Devices

To begin, enable Bluetooth on your phone: Click Start and then Settings, choose the Connections tab, and then click Bluetooth. On the Bluetooth settings menu that appears, click the checkbox next to Turn On Bluetooth.

You'll also need to enable Bluetooth on your laptop. Open the Bluetooth device manager: Click Start, select Control Panel, and then double-click Bluetooth Devices. When the Bluetooth Devices window appears, navigate to the Options tab and click the box next to Turn Discovery On. Click Apply and then click OK.

Now that Bluetooth is activated on both devices, navigate to the Devices tab on your phone (you should still be



You'll need to turn on discovery mode on your laptop.

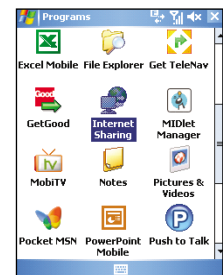
in the Bluetooth Settings window) and then click Add New Device. The phone will search for devices. When it finishes, click the name of your laptop and then click Next. Enter a passcode of your choosing. This passcode will help establish a secure connection between the phone and your computer. After you enter a passcode on the

phone, click Next.

On your laptop, watch for a balloon near the clock that says A Bluetooth Device Is Requesting To Connect To Your Computer. To Allow This Connection, Click This Message. When you see this balloon, click it. A new window will appear. In the Add Bluetooth Device Wizard window,

enter the same passkey that you entered on the Windows Mobile smartphone and then click Next. The Add Bluetooth Device Wizard window will let you know when the connection is successful. For extra security, check the box next to Turn Discovery Off and then click Finish.

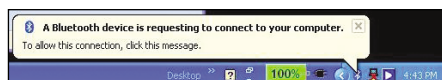
After you've finished establishing the connection on your laptop, you'll see a Partnership Settings window on your smartphone. Click Finish and then click OK to close out of the Bluetooth Settings window. Finally, close out of the Settings window. Your smartphone and your laptop should now be connected to one another.



Look for Internet Sharing in the Programs menu.

Share The Internet

Once you have successfully paired the phone and the laptop, it's time to share the Internet connection. On the phone, navigate to Start, Programs, and then scroll to Internet Sharing. If you can't find it in the Programs folder, look for it in the Windows Folder using the File Explorer.



Your computer will let you know when the phone attempts to establish a connection.

From the Internet Sharing screen, select Bluetooth PAN. Also, select the Network Connection you want to share and then click Connect. You may see a pop-up window on the phone that asks about making the device visible. If you see this window, click Yes. A balloon will appear to show the phone is establishing an Internet connection. The Internet Sharing window will let you know when this is complete.

From your laptop, click Start and Control Panel, double-click Network Connections, and then double-click Bluetooth Network Connection. When the Bluetooth Personal Area Network Devices window appears, select the name of your smartphone under Available Access Points and click Connect. You'll then see a window that shows the status of the connection.



Click Connect on your laptop to establish a connection.

Open Internet Explorer on your laptop to surf the Internet using your phone's high-speed connection. When you are finished surfing, click the Disconnect button from the Internet Sharing window on your phone.

What You Need

In order to use your phone as a modem for your laptop, you'll need to connect your laptop and your phone. A convenient choice is Bluetooth because it doesn't require any cables. If your phone and your laptop support Bluetooth, you should be in good shape. If not, check with your phone's manufacturer or your cell phone carrier for corded options. Some carriers also require special software to assist with the connection.

Of course, you will also need high-speed Internet access on your phone. Although some carriers will let you use nearly any data plan, others will require you to have a special data plan or an add-on plan. For example, Verizon Wireless requires you to have a qualifying plan and also requires that you subscribe to a Broadband-Access Connect feature. Check with your carrier for information and prices to suit your needs.

Last, but certainly not least, you need a compatible phone. Here's a quick rundown of popular Windows Mobile smartphones from each of the top four wireless carriers:

AT&T

- AT&T 8525
- Cingular 3125
- Palm Treo 750
- Samsung Blackjack

Sprint Nextel

- HTC Mogul
- Motorola MOTO Q
- Palm Treo 700wx
- Samsung IP-830W

T-Mobile

- T-Mobile Dash
- T-Mobile SDA
- T-Mobile Wing

Verizon Wireless

- Motorola Q Black
- Palm Treo 700wx
- Samsung i730

Common Roadblocks

Because every phone and every carrier will vary, you may hit a few snags along the way. Here are a few suggestions to help.

Double-check your connection. If your laptop cannot connect to the Internet, go back to the steps where we talk about connecting your phone to your laptop. If you're having difficulties attempting to connect via Bluetooth, consider switching to a wired connection.

Look in other places. Some carriers and devices may place Internet Sharing in a different location. Two of the most common places are within the Programs listing and within the Windows folder on the device. If you cannot find Internet Sharing, it's possible that your

phone does not support this functionality, that you need carrier-specific software, or that this option is located elsewhere. Contact your carrier for additional assistance.

Dropped connections. If you've successfully established a connection but it keeps cutting out after a little while, first make sure that the Internet Sharing program is still open on your phone. (By clicking the X button to close or minimize Internet Sharing, you can lose your connection.) Next, look for Internet time-out settings on the phone. If the phone automatically disconnects from the Internet after a certain amount of inactivity, the connection between devices will also drop.

Connect To An Encrypted Wireless Network



Just because you're out of the office for the day, don't think that gets you out of being productive, Sonny Jim. With the huge (and still growing) number of wireless networks all over the country, chances are pretty good you and your trusty notebook will be able to find and maintain an Internet connection almost anywhere you go. Sure, you could just pop in to a coffee shop that advertises "Free Wireless Internet," but connecting to a public network like that is easy.

Sometimes, you won't have the luxury of stumbling

across an easily accessible public access point. Many times on the road, you'll have to connect your notebook to a private (and that means encrypted) wireless network. Many companies and individuals choose to encrypt their networks in the interests of providing more data security, but sometimes, on the road for work, these networks are your only option for connecting to the Internet and getting back in touch with the office.

While connecting to *anything* encrypted sounds a bit daunting at first, the steps are actually rather simple. Follow along, and you'll be back into Outlook before the first Out Of Office autoreply is sent out. The following steps are for Windows XP, but the process is nearly identical for all of the Windows operating systems.

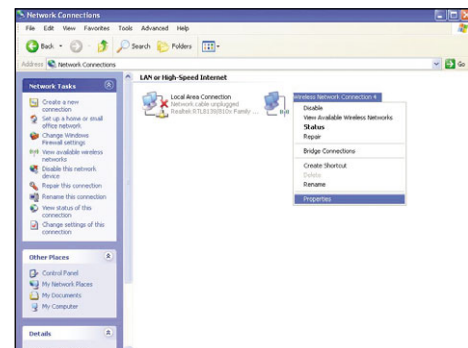
by Shawn Kupfer

Finding The Network

Assuming you're allowing Windows to manage your wireless connections, you'll see an icon in the bottom-right corner of the System Tray that looks like a computer with lines radiating out from it. (In the event that you're not using Windows to manage your wireless connections, you're probably using a piece of proprietary software from your wireless card's manufacturer. There is a lot of variation between these programs, so consult the documentation that came with your card for information on how to connect using this proprietary software.) If you're not connected, that little computer will either have an X over it or (in the case of a limited or faulty connection) a small yellow triangle with an exclamation point in the center. You'll want to keep an eye on this icon, as it will let you know when you're connected and can get to work.

With this window still open, double-click My Computer and then double-click Control Panel. Double-click the icon for network connections and, when the new window pops up, right-click the icon for your wireless connection (usually named "Wireless Connection" or something similar). Click the Wireless Networks tab. If the checkbox for Use Windows To Configure My Wireless Network Settings is not checked, your network card is using proprietary software to manage your network settings. Check your card's documentation for tips on how to proceed in this case.

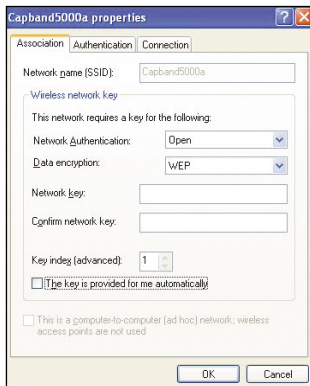
Assuming you are using Windows to manage your wireless connections, click the View Wireless Networks button in the top half of the window. A list of available wireless connections will pop up. If the en-



The Network Connections window is your starting block for managing your wireless connections. If you're having problems after you've already connected, sometimes clicking the Repair option may fix your connection.

rypted network is the only one available, that's the one you'll see; you can recognize it by the word "Encrypted" next to the network's name. (Open or Automatic networks can also be encrypted, however, so don't worry if you don't see the word.)

WEP vs. WPA



If the network you're using uses WEP encryption, make sure your Association settings match those outlined above. If you're using WPA, select WPA in the Network Authentication drop-down box and then select TKIP in the Data Encryption box.

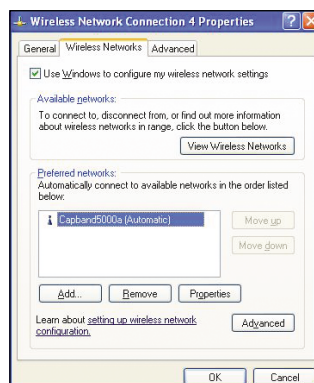
button and then uncheck the Automatically Use My Windows Logon Name And Password (And Domain If Any) checkbox. Click OK, click OK a second time in the Protected EAP Properties window, click OK a third time in the Wireless Network Properties window, and then click OK one more time in the Wireless Network Connection Properties window. This should bring you back to the Desktop, and a balloon will pop up at the bottom of your System Tray that will tell you to click it. Do so and then enter the username and password provided for you by the owner of the wireless network. Your little computer icon should now be radiating green lines, meaning you're connected to the network.

For WPA authentication, select WPA in the Network Authentication box of the Association tab and then TKIP in the Data Encryption box. Follow the same steps as above for the Protected EAP Properties and the EAP MSCHAPv2 Properties windows and then click OK until you're back at the Desktop. The balloon prompt and logon for the network should pop up. Enter the username and password provided for you by the network's owner, and you should be connected within a few seconds.

Connecting to an encrypted network requires a few more steps than connecting to a public access point, but it's well worth the five minutes of extra effort if the encrypted network lets you be productive while you're out on the road.

Networks can be encrypted using either WEP (Wired Equivalency Privacy) or WPA (Wi-Fi Protected Access) encryption. You'll have to know which type of encryption the network to which you're trying to connect uses. Once you've determined that (presumably from whoever owns or runs the network), execute one of the two courses of action below.

For WEP, either enter the key (this should have been provided for you by the person running the network) in both the Network Key and Confirm Network Key boxes. If the owner of the network so indicates, click the The Key Is Provided For Me Automatically checkbox. Next, click the Authentication tab. Click the Enable IEEE 802.1x Authentication For This Network checkbox and then select Protected EAP (PEAP) from the drop-down box. Click Properties below the drop-down box and then uncheck the Validate Server Certificate checkbox. Click the Configure



To connect to a network, you can either find it by clicking View Wireless Networks or, if you know the name of the network, by clicking Add and then typing the name of the connection you're trying to access.

Now That You've Got It, Don't Lose It

Most of the time, wireless connections are stable enough, but every once in a while, you may get a bad connection that keeps dropping out on you. In this case, there are a few steps you can take to ensure a more solid connection.

First, right-click the icon in your System Tray that informs you of your connection status (the computer with the lines radiating out from it, as discussed in the article above). Click View Available Wireless Networks. You'll also see a few bars representing the signal's strength; the more bars, the better, of course, but for most practical purposes, anything over two bars will probably work. If the network you're connected to has low signal strength and another network is listed with more bars, attempt to connect to the stronger signal by double-clicking that network. Often companies will run more than one wireless network, especially in a large building, so the network you initially connect to may not be the strongest signal offered.

Also, your proprietary software can sometimes be an impediment to maintaining a stable connection on an encrypted private wireless network. To get past this problem, you can (temporarily, of course) allow Windows to manage your wireless connections. If you are using proprietary software, when you right-click on the System Tray icon for your wireless connection and click View Available Wireless Networks, a message will pop up saying that Windows is not currently managing your wireless connections. Click the option on the left side of the screen that says Change Advanced Settings and then click the check box for "Use Windows to configure my wireless network settings." Follow the connection steps in the above article, and you should get a stronger connection.

PC Today Q&A

Go Wireless With Qualcomm's Embedded Computing Initiative



Mike Concannon

If you have a smartphone, a PDA with Internet connectivity, or a notebook that can connect to the Internet wirelessly through cell phone lines, there's a good chance Qualcomm has played a part in giving you that wireless freedom. In fact, QCT (Qualcomm CDMA [Code-Division Multiple Access] Technologies) provides 3G chipset and software technology that powers the majority of the commercially available 3G devices. According to Mike Concannon, vice president of Qualcomm's Strategic Products group, the QCT division provides complete end-to-end solutions for wireless, including digital, radio frequency, and analog pieces, along with power management and software.

The embedded computing initiative, which is part of the QCT division, gives notebook manufacturers the tools to integrate wireless mobile broadband connectivity via cell phone lines. As of July, Qualcomm had worked with 18 notebook manufacturers to launch more than 150 notebooks with embedded mobile broadband connectivity. We spoke with Concannon to learn more about QCT's involvement in embedding mobile broadband connectivity.

Q How long has Qualcomm been working on embedded computing?

A About three years. The interesting thing about embedded computing is we believe it's going to follow a lot of the historical trends of different connectivity devices. The original modems that plugged into your phone line came as external cards that you would install in your computer. Now, these cards are integrated into the device. WLAN (wireless local-area network) and wireless broadband have been following a similar path. The first opportunity to get wireless broadband was through the attachment of an external card. That environment isn't the greatest for wireless because there is separation of antennas and noise. The end of that card is basically the antenna. If you embed the card in the laptop, the whole top lid of your display can contain antennas, giving you much better signal strength and reception than a card sticking out the side.

Q Are there other benefits to having an integrated card?

A Yes. For example, I now have an embedded notebook because I broke two cards that stuck out the side. When you're traveling or removing your notebook from your briefcase frequently, the cards that stick out tend to get damaged.

Another benefit is that it's more integrated with other laptop features. For instance, my notebook has a little display on it that shows Bluetooth, wireless LAN, and wireless WAN [wide-area network]. This display tells me what's powered up and what's not powered up. The computer has some software that powers Bluetooth, WLAN, or wireless WAN down and saves me power.

Q I can tell you are sold on embedded computing. Are there any drawbacks?

A Probably the only drawback I would see is having an external card allows you the flexibility to keep up with the latest speed. However, some computer manufacturers now have programs where, for just a little bit of money, they'll mail you the latest and greatest card. You have to open up the battery compartment of your notebook and install the upgraded card. There's a little connector in the laptop. You pull the old card out, and you slip the new card in. But if you are not familiar with doing that stuff, then plugging into a USB port or a card slot is a little easier.

Once, I was sitting next to a guy who had a similar machine as mine. I had an external card, and he had an embedded device. He was connected to the network, and was getting decent throughput. I could not acquire the network. It just goes to show you that the sensitivity difference between the two devices is pretty significant.



HP Compaq 6510B
(Starts at \$949;
www.hp.com)

Q I know that some people are reluctant to use the technology or subscribe to the service because of price. Do you expect that price to come down over time?

A Yeah, we do. As a matter of fact, it's come down pretty substantially over the last few years. I think I remember it used to be up in the \$80-per-month range. I think now there are some services, at a corporate rate, you can get below \$50; and that's all-you-can-eat types of data. Some companies offer free cards if you sign up for two years of service. At one point, you had to lay out \$150 for that card.

Q Ten years ago, cell phones were becoming popular, but not everybody had one. Today, most people have cell phones. Do you think we'll reach a similar point with mobile Internet where it's more common than not for people to have this connectivity?

A I think it will for the reason that just as you see a lot of different services that come into your home today, where service providers will bundle together your phone service, your TV service, and your digital data

service. I think the wireless companies will bundle together your payment for your cellular voice device and your cellular data device. When somebody comes to me and says, "I can take your cable modem, your cable TV services,



The external display on this Toshiba Portégé R400 (starts at \$2,599; www.toshiba.com) works with the embedded connectivity in the notebook to show current connection status.

and your telephone services, and I can give you one price which is less than half of what you are paying today for the three individually," that's a compelling deal. I think by that very nature, people will want to use the data devices in their notebooks.

I think the biggest hurdle today for embedded computing is, as you said, some of the pricing, but I think that's an elasticity curve that will work itself out. But people don't know what embedded

computing is. It's not something that is obvious to people because they think of their cellular phone as a voice device, not as a data device.

Q You mentioned people's understanding as perhaps one of the hindrances to the adoption of embedded computing. What do you see driving the adoption?

A I think understanding is one piece. I think the second thing, as you pointed out, is the cost. Once things become a little cheaper, more and more people will start to use it.

I think the other thing is the confluence of data that is coming to these devices. Some people may be interested in downloading their emails, but it's also possible to go on the Internet, download your favorite newspaper, or watch mobile TV.

Q Is there anything else you would like to add?

A When I get a chance to sit down and explain to people what the wireless broadband does for me, nine out of 10 people will go buy it. I think the wireless broadband really delivers the promise of wireless mobile data.

When you talk about wireless data, a lot of people will say, "Oh yeah, yeah, yeah, Wi-Fi." And you know, they've come to expect that I can get wireless data in certain places and can't get wireless data in other places. Being able to download information, get information about your whereabouts or about anything no matter where you are is an incredibly powerful tool. I think that is why this technology is so exciting.

by Jennifer Johnson

The Delayed Traveler

by Marty Sems

Admit It, This Is The First Page You Turned To

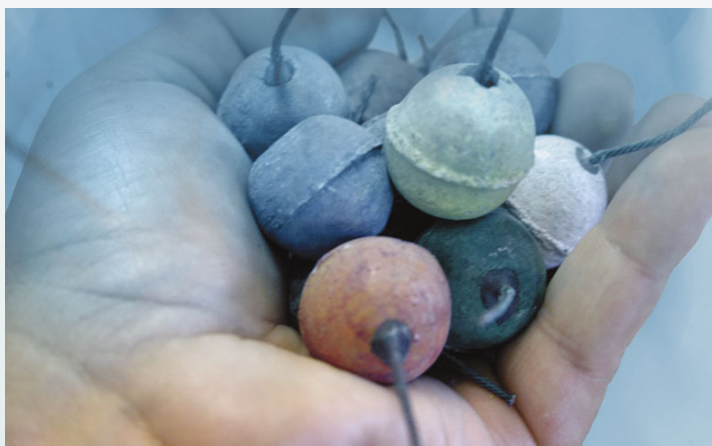
No, Your Other Right



When you're traveling internationally, the qStart (about \$21 and up; www.qstartreminders.com) plugs into your rental car's power jack and verbally reminds you, among other things, to drive on the correct side of the road. But as *PC Today* Editor Cal Clinchard succinctly put it, "Should anyone who needs this device really be driving at all?"

Sky Marshal Took My Smokeballs

OK, so we usually forget about the 3-ounce fluid rule and have our shaving gel confiscated every time we fly, but at least we know to leave the fireworks at home. That's, you know, kind of an easy one. But apparently, not everyone was listening in class. According to the FAA, more than a third of the fireworks discovered in U.S. airline luggage in 2006 were on flights involving Hawaii. Besides all the trans-Pacific air traffic from the firecracking meccas of Asia, it seems there's also a booming trade on the islands themselves. Why do people fly all the way to Hawaii to buy fireworks, you ask? 'Cause they're cheaper there, silly.



SOURCE: THE HONOLULU ADVERTISER



Not Without My Cell Phone

What's more precious to you than your cell? According to a small study in the UK, one in three people wouldn't give up their mobile phones for a couple million bucks. 85% of those surveyed reckon that a cell is essential to their quality of life,

and 76% considered a phone a social necessity. Tellingly, most 16- to 24-year-olds would rather give up alcohol, chocolate, coffee, tea, or sex than their phones for a month.

SOURCE: THE CARPHONE WAREHOUSE

Your Whole Day Covered.



Feren



7:00 a.m.
Pack Your Lunch

Insulated compartment keeps food hot or cold all day



8:00 a.m.
Out the Door

Protect your notebook with a fully padded compartment



1:00 p.m.
Grab a Drink

Insulated pockets keep beverages cool and close by



4:30 p.m.
Rock Your Tunes

MP3 pouch with headphone port protects your device



7:30 p.m.
Plan Your Night

Removable cell phone holder keeps your phone within reach

Fry's

BEST BUY

city

Office DEPOT

OfficeMax

COMPU\$A
We got it. We get it.

MICRO CENTER
The Ultimate Computer Store

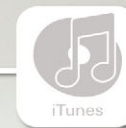
STAPLES

Targus mobile solutions are available at these fine retailers and www.targus.com.

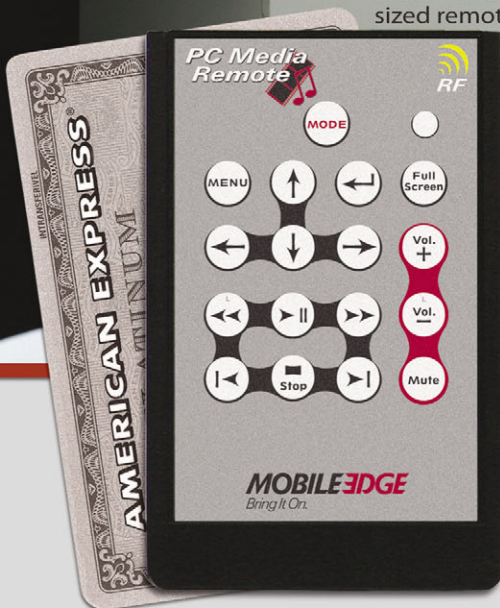


Targus

It's your world (we just help you control it)



Credit-card
sized remote!



The Mobile Edge PC Media Remote Play your movies, music and more from up to 100 ft away

Because we can all use a little more control

Your laptop is meant to make your life more convenient and productive, so why be tied to it when you can control it from a distance? With the new PC Media Remote from Mobile Edge, you can run your music and video software from up to 100 feet away! RF Technology means there are no line of sight limitations, as there are with most IR devices. The PC Media Remote wirelessly controls Windows Media Player 10 and earlier, iTunes for Windows, WinDVD, and DVD Player for Mac.

The Media remote conveniently stores in your notebook's PC Card slot for easy storage when traveling, and the USB adapter snaps into the remote, so there are no small devices to lose while on the road. Play your media how you want, from where you want with the PC Media Remote!

Also available: the Wireless Presenter for your PowerPoint presentations and the Presenter Plus, which controls both your media *and* your PowerPoint!
See www.mobileedge.com/pctoday for more information.

